(University of London)

WYE COLLEGE

Incorporated by Royal Charter

THE REPORT OF THE PRINCIPAL TO THE GOVERNING BODY

for the year 1958-59

1960

SIXTY-SIXTH REPORT

FOR THE YEAR ENDED 30th SEPTEMBER, 1959

Governing Body

Since the last Report the following appointments have been made:

Representative Governors:

By and from the Academic Board of Wye College:

Dr. H. S. Darling.

Professor W. Holmes.

Professor H. W. Miles.

Dr. I. W. Selman.

By the former students of Wye College and the former Horticultural College, Swanley:

Mr. B. S. Furneaux.

Mrs. Frances Perry.

Resignations

(*a*) Mr. E. W. Woodhead (appointed by the Kent County Council) on appointment as a permanent member of the Local Government Commission.

(*b*) Dr. J. R. Raeburn (appointed by the University of London) on appointment as Professor of Agriculture in the University of Aberdeen.

Accounts

The audited accounts have been presented and copies furnished to all persons, corporations and bodies contributing to the revenue of the College.

J. W. KENNARD,
Clerk to the Governors.

11 Bank Street,
Ashford, Kent.

December 1959.

CHAIRMEN OF THE GOVERNING BODY
(1893-1959)

1893–1904	E. J. Halsey, Esq.
1905–1915	The Rt. Hon. Lord Ashcombe, P.C., M.A.
1916–1919	H. E. H. Rice, Esq.
1920–1925	The Rt. Hon. Laurence Hardy, P.C., M.A., D.L.
1926–1930	C. B. Edgar, Esq., D.L., B.Mus., B.Sc.
1931–1945	Sir Edward Hardy.
1946–	The Rt. Hon. Lord Northbourne, B.A.

PRINCIPALS OF THE COLLEGE
(1894-1959)

1894–1902	A. D. Hall, Esq., M.A., F.C.S. (later Sir A. Daniel Hall, D.Sc., F.R.S.)
1902–1922	M. J. R. Dunstan, Esq., O.B.E., M.A., F.R.S.E., F.I.C.
1922–1940	R. M. Wilson, Esq., B.Sc., N.D.D.
1940–1945	V. R. S. Vickers, Esq. (*Acting*).
1945–	Dunstan Skilbeck, Esq., C.B.E., M.A.

WYE COLLEGE

VISITOR

His Grace The Lord Archbishop of Canterbury.

FELLOWS OF THE COLLEGE

Sir E. John Russell, O.B.E., D.Sc., F.R.S.
E. S. Salmon, Esq., Emeritus Professor of Mycology.
Sir Edward Hardy.
Mrs. R. J. Tabor, C.B.E., D.Sc., A.R.C.S.
Sir Ronald Hatton, C.B.E., M.A., D.Sc., F.R.S.
Geoffrey Mure, Esq., M.C., M.A., LL.D.
James Wyllie, Esq., O.B.E., B.Sc.
Professor C. D. Darlington, D.Sc., F.R.S.
Sir Edward Salisbury,C.B.E., D.Sc., LL.D., F.R.S., F.L.S.
Professor Sir James Scott Watson, C.B.E., M.C., LL.D., D.Sc.

GOVERNING BODY

The Governing Body consists of 32 members under the Chairmanship of The Lord Northbourne.

Ex-Officio Governors

*The Principal
*The Vice-Principal

Representative Governors

Appointed by the Senate of the University of London:

Miss Marian E. A. Bowley, Ph.D., University College, London.
Professor Dame Lillian Penson, D.B.E., Ph.D., D.Litt., LL.D., D.C.L., F.R.C.S., Bedford College, London.
J. R. Raeburn, Esq., Ph.D., London School of Economics.
*Professor H. H. Read, D.Sc., F.R.S.E., F.R.S., Royal School of Mines, London.
Professor S. W. Wooldridge, C.B.E., D.Sc., F.R.S., King's College, London.
W. R. Wooldridge, Esq., M.Sc., Ph.D., F.R.C.V.S., F.R.I.C., The Animal Health Trust, London.

Appointed by the Hebdomadal Council of the University of Oxford:
N. D. G. James, Esq., M.C., M.A., Old Town House, Nuneham Courtenay, Oxfordshire.

Appointed by the Council of the Senate of the University of Cambridge:
R. G. Tomkins, Esq., M.A., Ph.D., Department of Scientific and Industrial Research, Ditton Laboratory, Larkfield, Kent.

Appointed by the Minister of Agriculture:
*E. Brundett, Esq., Acton Farm, Charing, near Ashford.

Appointed by the Kent County Council:
*The Lord Brabourne, Newhouse, Mersham, near Ashford.
*Miss M. Maplesden Noakes, Long Rede, Barming, Maidstone.
*The Lord Northbourne, B.A., Northbourne Court, Deal.
*G. T. Paine, Esq., M.B.E., J.P., The Grange, Lydd.

Appointed by the Surrey County Council:
C. Crowther, Esq., M.A., Ph.D., 79 Cheam Road, Ewell.
Colonel the Honourable C. G. Cubitt, D.S.O., T.D., D.L., High Barn, Effingham.
*T. Hilling, Esq., Prestons, Chobham.

Appointed by the Council of the Royal Horticultural Society:
H. V. Taylor, Esq., C.B.E., D.Sc., A.R.C.S., V.M.H., Preston Grange, Barnet Road, Potters Bar, Middlesex.

Appointed by the Kent Incorporated Society for Promoting Experiments in Horticulture:
F. R. Tubbs, Esq., Ph.D., M.Sc., A.R.C.S., D.I.C., F.L.S., East Malling Research Station, near Maidstone.

Appointed by the Council of the Royal Agricultural Society of England:
Thomas Neame, Esq., V.M.H., Macknade, Faversham, Kent.

Appointed by and from the Academic Staff of Wye College:
*H. S. Darling, Esq., B.Sc., M.Agric.
*Professor W. Holmes, Ph.D.
*Professor H. W. Miles, D.Sc.
*G. P. Wibberley, Esq., Ph.D.

Appointed by and from the former Students of Wye College and Swanley Horticultural College:

*B. S. Furneaux, Esq., M.Sc., 94 Warwick Park, Tunbridge Wells.

Mrs. F. Perry, Bulls Cross Cottage, Enfield, Middlesex.

Co-optative Governors

*J. H. Berry, Esq., M.C., J.P., Redthorn, Chilham, near Canterbury.

*Hugh R. Finn, Esq., Vinesole, Nackington, Canterbury.

*Miss E. A. Jones, M.A., 37 Chatsworth Court, London, W.8.

Sidney H. Moon, Esq., O.B.E., Downside Farm, Cobham, Surrey.

Clerk to the Governors and Steward of the Royal Manor of Wye

J. W. Kennard, Esq., Solicitor and Notary Public, 11 Bank Street, Ashford.

* Member of the Executive Committee.

COLLEGE ACADEMIC BOARD

Chairman: The Principal
H. S. Darling, B.Sc., M.Agric.
Professor W. Holmes, Ph.D.
A. E. Maddison, B.A.
Professor H. W. Miles, D.Sc.
I. G. Reid, B.Sc.Econ.
Frieda C. Schimmer, M.Sc.
I. W. Selman, Ph.D.
Margaret S. Smith, Ph.D.
E. Sita Smyth, M.A.
Professor R. L. Wain, D.Sc.
G. P. Wibberley, Ph.D.
E. H. Wilkinson, Ph.D.
Secretary: C. W. A. Garland, B.Sc.

ACADEMIC STAFF
(1958-59)
(as at October 1958)

(R) *Principal*—Dunstan Skilbeck, C.B.E., M.A.(Oxon.).

Vice-Principal—E. Sita Smyth, B.A.(Bristol), F.L.A.

Secretary—C. W. A. Garland, B.Sc.(Lond.).

Department of Agriculture

Professor of Agriculture and Head of Department:

(A) W. Holmes, B.Sc.Agric., Ph.D.(Glasgow), N.D.A.(Hons.).

Lecturers:

(R) P. C. J. Payne, M.Sc.(Dunelm), Ph.D.(Reading), A.M.I.B.A.E.

J. E. Duckworth, B.Sc., Ph.D.(Dunelm).

A. E. Maddison, B.A.(Oxon.), Dip.Agric.Sc.(Cantab.), F.S.S.

J. D. Paterson, M.R.C.V.S. (Veterinary Investigation Officer).

Assistant Lecturers:

P. Innes, B.Sc.(Dunelm).
J. G. W. Jones, B.Sc.(Dunelm), Ph.D.(Aberdeen).
Marion Murray, B.Sc.Agric.(Edin.), M.Sc.(Ohio).

Farm Manager:

P. H. Keen, D.F.C., B.Sc.Agric.(Lond.).

N.I.A.B. Liaison Officer:

A. S. Gregg, B.Sc.Agric.(Reading)

Department of Horticulture

Professor of Horticulture and Head of Department:

(A) H. W. Miles, M.Sc.(Bristol), D.Sc.(Manc.).

Lecturers:

(R) E. H. Wilkinson, B.Sc.(Birm.), Ph.D.(Bristol).
(PR) A. A. Jackson, B.Sc.(Manc.).
J. T. Sykes, B.Sc.Hort., B.Sc.(Lond.).

Demonstrator:

Elizabeth Emmerson, B.Sc.Hort.(Lond.).

Gardens Steward:

Mary Page, N.D.H., Dip.Hort.(Swanley).

Market Gardens Manager:

R. S. Lewis.

Department of Physical Sciences

Professor of Agricultural Chemistry and Head of Department:

(A) R. L. Wain, Ph.D.(Sheff.), D.Sc.(Lond.), F.R.I.C.

Lecturers:

(R) Margaret S. Smith, B.Sc., Ph.D.(Lond.), A.R.I.C.
G. P. Askew, B.Sc.Agric., B.Sc.(Lond.).
Jeanne Ingram, B.Sc.Agric.(Edin.), M.Sc.(Lond.).
D. R. Williams, M.Sc.(Wales).

Assistant Lecturers:

K. E. Carling, B.Sc.(Lond.), (Analyst).
J. B. Dalrymple, B.Sc.(Sheff.), M.Sc.(Lond.).
G. L. Mattok, B.Sc., Ph.D.(Wales).
Beryl Rickard, B.Sc., Ph.D.(Lond.), A.R.I.C.

Agricultural Research Council Growth Substance and Fungicide Unit

Honorary Director:

Professor R. L. Wain, Ph.D.(Sheff.), D.Sc.(Lond.), F.R.I.C.

Principal Scientific Officer:

C. H. Fawcett, M.Sc., Ph.D.(Lond.), A.R.I.C.

Senior Scientific Officers:

D. M. Spencer, B.Sc.(Wales), Ph.D.(Lond.).
F. Wightman, B.Sc., Ph.D.(Leeds).

Scientific Officers:

G. G. Clarke, B.Sc., Ph.D.(Bristol).
H. F. Taylor, B.Sc.Hort.(Lond.).

Assistant Experimental Officer:

G. A. Carter, B.Sc.(Reading).

Department of Biological Sciences

Reader in Agricultural Botany and Head of Department:

(R) I. W. Selman, B.Sc., Ph.D.(Lond.).

Lecturers:

(R) R. M. Harrison, B.Sc.(Lond.), A.R.C.S.
(R) Frieda C. Schimmer, M.Sc.(Lond.), A.R.C.S.
D. A. Ede, B.Sc.(Lond.), M.Sc., Ph.D.(Edin.).

Assistant Lecturers:

W. A. Kelly, B.Sc.(Wales).
R. G. Milne, B.A.(Cantab.).
G. F. Pegg, B.Sc.(Lond.), M.Sc.(Nott.).

Demonstrator:

Eleanor J. Bell, B.Sc.(Glasgow).

Department of Economics

Reader in Agriculture, with special reference to Agricultural Economics, and Head of Department:

(A) G. P. Wibberley, B.Sc.Agric., Ph.D.(Wales), M.S.(Illinois).

Lecturers:

(R) R. R. W. Folley, B.Sc., B.Com.(Leeds).
(PR) I. G. Reid, B.Sc.Econ.(Lond.), Dip.Agric.(Cantab.).

(PR) J. T. Ward, B.Sc.Econ.(Lond.), B.Litt.(Oxon.), Dip.Agric. Econ.
G. Allanson, M.A.(Cantab.).
R. H. Best, B.Sc.(Dunelm), M.Sc.(Lond.).
E. S. Clayton, B.Sc.Econ.(Lond.).
W. L. Hinton, B.A.Comm.(Manc.), N.D.A.
J. D. Sykes, B.Sc.(Leeds), N.D.A., Dip.Agric.Econ.(Oxon.).

Assistant Lecturer:
G. J. Tyler, B.Sc.Agric.(Lond.).

Administrative Assistants:
H. G. Halls.
J. H. Hooper, Dip.Agric.(Wye).

Department of Hop Research

Principal Scientific Officer and Head of Department:
(R) H. S. Darling, B.Sc., M.Agric.(Belfast), A.I.C.T.A., F.R.E.S., M.I.Biol.

Senior Scientific Officers:
R. A. Neve, B.Sc.Agric.(Reading), Dip.Agric.Sci.(Cantab.), M.I.Biol.
F. C. Thompson, B.Sc., M.Sc.Agric.(Dunelm), A.R.I.C.

Scientific Officers:
J. R. Coley-Smith, B.Sc., Ph.D.(Birm.).
I. H. Williams, M.Sc., Ph.D.(Nott.).

Senior Experimental Officer:
F. H. Beard, Dip.Hort.(Wye).

Experimental Officers:
E. G. Cripps, M.Sc.Agric.(Lond.), A.I.C.T.A.
R. F. Farrar.

Assistant Experimental Officer:
E. W. Weston, B.Sc.(Lond.), A.R.C.S.

(A) Appointed teacher of the University of London.
(R) Recognized teacher of the University of London.
(PR) Provisional recognition as a teacher of the University of London.

ADMINISTRATIVE STAFF

(1958-59)

(as at October 1958)

Registrar	C. W. A. Garland, B.Sc.(Lond.).
Assistant Registrar	A. G. Page, M.A.(Oxon.).
Librarian	E. Sita Smyth, B.A.(Bristol).
Assistant Librarian	Margaret Mitchell, B.A.(Lond.).
Domestic Bursar	Eleanor M. Knight, M.C.A.
Accounts Officer	A. Ireland.
Maintenance Officer	J. C. Foster.
Principal's Secretary	Mary M. Skinner.

Wardens

Warden of Men Students	C. W. A. Garland, B.Sc.
Warden of Women Students	E. Sita Smyth, B.A.
Assistant Resident Wardens	Jeanne Ingram, M.Sc.
	J. T. Sykes, B.Sc.
	I. H. Williams, Ph.D.

His Royal Highness Prince Philip with members of the 1958 Icelandic expedition.

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THE REPORT OF THE PRINCIPAL TO THE GOVERNING BODY OF THE COLLEGE OF ST. GREGORY AND ST. MARTIN AT WYE

for the

Academic Year ended 30th September 1959

The College was deeply honoured by a visit which His Royal Highness Prince Philip, Duke of Edinburgh, made to the College on 5th November 1958. At his specific request the visit was informal and we delighted in the opportunity of showing to His Royal Highness something of the general work and life of the College. Particular emphasis was given to the research work in progress in Professor Wain's A.R.C. unit and in the Farm Management Section of the Department of Economics. After luncheon in Hall, which was accompanied by an entertaining impromptu interlude on the part of the student body, a visit was paid to the farm. Before his departure Prince Philip was persuaded to drive from the dairy on the village carrier's horse-drawn dray to the playing fields to see a rugger match in progress. In this venture he was supported by the Chairman and Vice-Chairman of the Governing Body and the Principal, pursued on foot at a smart jog trot by more than half the College. It was a particular honour to the members of the Icelandic Expedition to be presented to His Royal Highness and to be able to discuss with him the details and results of their expedition which he had so generously supported and encouraged. His keen and appreciative interest in all he saw, his almost uncanny knack of getting immediately to essential points, and his lively and constructive critical faculty will always be remembered by the many members of the College, both senior and junior, who were privileged to meet him. It was a most memorable day in the annals of the College, which is deeply grateful to His Royal Highness for his encouragement, his width of vision, and his charming informality.

In June it had been hoped to receive, again informally, a visit from His Royal Highness the Duke of Gloucester who had expressed a desire to see, in particular, the College farm. Most unfortunately he was prevented, at the last minute, from making his visit owing to indisposition. It is, however, to be hoped that next year His Royal Highness may find another opportunity to visit the College.

The Governing Body

The College received with regret the resignations of Dr. Raeburn and Mr. Woodhead, both of whom had given invaluable service to the Governing Body. Dr. Raeburn, one of the University representative Governors, resigned on his appointment to the Chair of Agriculture in the University of Aberdeen, and Mr. Woodhead, formerly Director of Education for Kent, on his appointment as a permanent member of the Local Government Commission. To both the College extends its good wishes on their new appointments. The College also wishes to offer its congratulations to Professor S. W. Wooldridge, C.B.E., on his election to a Fellowship of the Royal Society, and to Mr. Thomas Neame, V.M.H., on his election as Master of the Worshipful Company of Farmers of the City of London.

Once again arrangements were made for the May meeting of the Governing Body to be combined with an Open Day at the College, which gave Governors an opportunity to inspect the buildings and estate, to meet the students and to dine with the College in Hall. Members of the Governing Body give up a great deal of their time to the administration of the College and it gives particular pleasure to the College, of which they themselves are such an important part, to be able to entertain them, show them in greater detail its work, and to meet them in pleasant informality. It gives to all who work and study at Wye an opportunity of expressing our appreciation of the lively interest and help which the members of the Governing Body so freely give to the whole College.

The Student Body

The number of students admitted in October 1958 was 229, an increase of 27 over the preceding year. The number of full-time postgraduate students increased from 10 in the preceding year to 24, this increase being largely accounted for by the institution of the M.Sc. course in Poultry Science to which further reference will be made later. The number of women students again showed a slight further decline, from 48 to 45. By increasing the accommodation available for men at Withersdane Hall and by bringing into use the new postgraduate hostel in the converted cottages in Olantigh Road, now known as Squires, it was possible to accommodate 191 students in College precincts, as compared with 173 in the preceding year. 34 undergraduates and 14 postgraduates were accommodated in lodgings.

In my last report I took the opportunity of expressing the gratitude of the College to the inns and landladies of Wye who have done so much for the students who have lodged with them. The

College has also played an important part in this connection by assisting, where necessary, with the furnishing of student lodgings. Nonetheless, lodgings are generally at best but an unsatisfactory substitute for College rooms, particularly for undergraduate students, and it may be hoped that, in due course, the College will be able to accommodate all its undergraduates either in College precincts or in College houses. Experience with the student rooms in the Old Flying Horse suggests that this is an entirely satisfactory way of housing students and indeed, from their point of view, a most popular solution of the problem. In years gone by it was held necessary to keep students under close supervision, almost under lock and key, and gate rules were rigidly enforced. These customs have, however, almost universally fallen into desuetude both in the older and in the civic universities and, it is believed, with singularly little prejudicial result. On the whole the spirit of College regulations in regard to closing hours has been well observed and the one-time general sport of climbing in—at Wye a singularly unadventurous pursuit—has lost most of its appeal with advantage both to the state of the fabric of the College and to the clothes of the students.

The results of University examinations are given in detail in Appendix III. In general these were an improvement on the preceding year, and it is particularly gratifying to be able to record the award of two First Class Honours in the final examination for the B.Sc. Honours degree in Agriculture.

During the year student health was good save for a minor influenza epidemic at the beginning of the Spring Term. In consultation with Dr. Balfour and the College Wardens the system for action to be taken over accidents involving immediate treatment and the effective reporting of all such accidents was further improved. Once again the College desires to record its appreciation of the services of Dr. G. M. Balfour, its Honorary Medical Adviser, and of Sister Fawcett, S.R.N., the College nurse. Such appreciations, which are made annually, might seem to lose something of their force by repetition but this is in fact very far from the case. It is doubted if any College receives better or more devoted medical attention, and here the term medical may be interpreted in its widest context, for more often than not it extends to that wise understanding and good counsel which used to be the prerogative of the experienced general practitioner, the rarity of which is sometimes deplored in the modern state.

The Staff of the College

It is with the very greatest regret that the death is recorded, in early October of the present year, of Emeritus Professor Ernest

Stanley Salmon, Fellow of the College and for thirty years a most distinguished member of the staff of the Department of Hop Research. He was appointed to the College in 1906 and officially retired in 1938, but retirement made little difference to him for he continued with his work, maintained an active interest in the affairs of his Department and of the College as a whole, and came almost daily to his study and the hop gardens until he was taken seriously ill a little over two years ago.

One of his greatest contributions was in the field of mycology. As early as 1900 he published a monograph on the erysiphaceae which is still an authoritative work on an important group of fungi. His later work at Wye, for which he will probably be longer remembered, particularly in this part of the world, was concerned with investigations into hop diseases which led on to his study of other characteristics of the hop plant and the breeding of new varieties of hops with which his name will always be so intimately associated. He was a man of many parts; in his younger days of considerable athletic ability, a great tennis player and a very keen skater when any opportunity presented itself. He was widely read, immensely independent in his thinking, and combined the precision of a scientist with a keenly sensitive artistic temperament. Although harsh and sometimes almost violent in argument, his conversation was invariably a stimulus and delight to his friends and colleagues. He was above all a great countryman and through his keen, observing and enquiring eyes constantly enjoying every facet of the changing scene and seasons. His contribution to his science, the hop growing industry at large, and to his many colleagues and friends at the College will long be gratefully remembered by all who knew him and his work.

Resignations, appointments and promotions during the year are recorded in Appendix I. Recognition as Teachers of the University was accorded to Dr. Ede and Messrs. Jackson, Reid and Ward, and Ph.D. degrees conferred upon Messrs. Darling, Coley-Smith, Pegg, and Miss Bell, and the M.Sc. degree upon Mr. Tyler.

The following is quoted from the annual report of the Chairman of the Agricultural Research Council:

> "By the generous benefaction of Professor R. L. Wain an income from the patents on his discoveries in the field of selective herbicides has been made available to the Council and has been used to establish the Wain Trust Fund. The objects of the fund are to facilitate the interchange of scientists between universities in the United Kingdom and overseas; to provide equipment in universities in the United Kingdom for agricultural research; and to further

other schemes of benefit to agricultural research for which the ordinary funds of the Council are not available."

The College wishes to express its appreciation of this generous action on the part of a colleague who has contributed so much to his field of research.

Once again several members of the academic staff made numerous visits overseas during the year to various countries in Europe, to Africa and to North America; these are noted individually in the Departmental reports which follow. I myself was grateful for the opportunity afforded me of leave of absence to go, as one of the two representatives nominated by Her Majesty's Government, through Central Africa with an American International Co-operation Administration mission and, later, to take part in a conference convened in New York by the U.S. Academy of Sciences and the Rockefeller Foundation to draft a report on the work of the mission. It was a most interesting experience in Anglo-American co-operation in the field of the economic development of Africa south of the Sahara in which I felt very proud to be able to take part.

I should also like to take this opportunity to express my appreciation of the honour which the University has accorded to the College by my election to the Senate.

Teaching

At the beginning of the session the postgraduate M.Sc. course in Poultry Science was started with 10 students. It will be remembered that it had been hoped to institute this course the year before but this proved impossible as there were then no candidates forthcoming. Not daunted by initial failure the College again advertised the course, but rather earlier in the session. The success which attended the initiation of the course in October 1958 must be very largely attributed to the generous and far-sighted policy of the British Egg Marketing Board in making available a number of postgraduate scholarships and also to the action of the Ministry of Agriculture in giving a number of its postgraduate scholarship awards to students who wished to read for the M.Sc. course at the College. The earlier and more widespread advertising of the course and the greater interest in careers in the expanding poultry industry were almost certainly important contributory factors to the rather remarkable change of circumstances in October 1958 as compared with those prevailing twelve months before. The first year of the course was satisfactorily completed and much useful experience gained in the organization of the teaching work. It is believed, with some confidence, that this course, leading to the M.Sc. degree by examination and dissertation, will be of value to the rapidly

developing industry in training selected students for useful careers therein. For many years poultry husbandry has been something of a cinderella in the general field of Agriculture and largely dealt with at the College Diploma level. In this connection this country has been lagging behind some of its competitors; the postgraduate training in poultry science now provided for at the College will, it is felt, assist in overcoming this weakness and, in due course, make its contribution to improving production methods in this increasingly important section of the agricultural industry.

During the year a minor modification was introduced into the Agriculture Honours degree course. It was decided that a short dissertation should replace the former essay paper (the ninth paper) in the final examination. This latter paper had, in practice, proved to be somewhat unsatisfactory and it is hoped that the new scheme will give a valuable opportunity to all candidates to be able to specialize on some subject or project and to be able to show their competency to tackle an independent piece of constructive work. Other minor modifications were made to teaching timetables with a view to avoiding overlapping in lecture courses. This was made possible by the close collaboration of all departments concerned. Such a brief statement, however, scarcely does justice to the amount of thought and committee work involved nor to the close co-operation which exists between all those concerned with the planning and execution of the teaching work for the first degrees in Agriculture and Horticulture which perforce involves so many disciplines. For administrative purposes the College has to be organized departmentally, but if ever the Departments were to become in any sense independent units it would be impossible effectively to integrate its teaching work, and it will be readily appreciated how vitally necessary this is to achieve when dealing with such complex subjects as agriculture and horticulture, involving as they do the pure and applied natural sciences, the social sciences, various technologies and the husbandries with which they are concerned. Herein, it is believed, lies one of the great strengths of the College in that all the teaching staff are actively concerned with various aspects of agriculture and horticulture and, working in such close proximity and understanding, are all intent upon achieving a thoroughly well-balanced approach to the two major subjects. I would like to express my appreciation of the very generous and co-operative way in which these matters are always approached and argued out, often albeit at great length, by the Academic Board.

The over-riding problem, however, still remains, namely that of trying to get a quart into a pint pot. There are still only three years for the degree and few, I believe, would really wish to see it

lengthened. The undergraduate is still only one remove from a schoolboy and yet fields of knowledge continue to expand. The result of this is the over-burdened timetable of formal lectures, laboratory classes and demonstrations to which I have so frequently called attention. The satisfactory solution has, I believe, yet to be sought.

Another interesting innovation introduced during the year was the holding of the so-called "midsessional" College examinations at the very beginning of the Spring Term instead of half way through the term. This proved to be much more satisfactory in that it encouraged study and revision during the Christmas vacation and also made it possible, at an earlier stage, to sort out candidates for Honours degree work.

Student Activities

It is very gratifying to report that at the end of the session Robin Mackenzie, the President of the College Student Union Society, was elected as the President of the University of London Student Union for the ensuing year. This is the first time that the College has given a Student President to the University and there is no doubt that he will fill this most onerous, responsible and exacting position with much distinction. His year of office at the College, which he discharged so admirably, certainly gave him much useful experience and included the responsibility of representing the students on the occasion of two royal visits to Wye. In spite of the fact that the College is so distant from the centre of the University its Student Union has always taken a surprisingly active share in the work of the University Union, of which our students are all members through their College Union. Through their new President they will be brought into closer contact with University student affairs and the College made even more conscious of its integral part of the University as a whole.

It was a good year for the College in the field of sport. The Rugger Club played a magnificent game against Imperial College, the eventual winners, in the semi-finals of the Inter-Collegiate Cup match. There was no score at full time and the College only lost to the visitors by one try scored in the last few minutes of the second half of extra time. Both the men's and women's hockey teams reached the semi-finals in their cup matches and the women students once again distinguished themselves in Inter-Collegiate Athletics by winning the Sherwood Cup and being placed second in the Open University Athletics Championship, a very notable achievement for a club so small in numbers.

The Ploughing Club once again won the inter-University

Ferguson Cup, the competition being held this year at Reading. The Rifle Club also had a successful year and won its division in the Kent Winter League and was placed first in the London University Postal League. Amongst the Clubs a newcomer was the Swimming Club, the Secretary of which swam on several occasions for the University. The Rugger Club with great enterprise sent a team to Paris to play three matches in the Easter Vacation and is to be congratulated on having put no less than three teams into the field on many occasions.

The various societies continued to flourish. The Music Society presented two excellent concerts under the accomplished direction of its new Choir Master, Mr. Isaac, and was once again invited by the Master of the Worshipful Company of Gardeners to sing madrigals at a City dinner. The Dramatic Society produced two plays, *Ring Round the Moon* by Anouilh, and *Love for Love* by Congreve, both with commendable enterprise and dash and the former with considerable skill and charm. As in former years, Mrs. Selman, assisted by members of the Music Society and under the auspices of the Arts Council of Great Britain, organized a series of four subscription concerts, details of which will be found in Appendix IX. An additional concert was given in this series by Miss Maeliosa Dale who will be remembered as Miss Tohall, a student of the College from 1946 to 1949. It was a great pleasure to all of us to hear her sing once again, though on this occasion, her first public concert, with all the range and polish of a professional. Mrs. Folley, assisted by some stalwart members of Senior Common Room, arranged two art exhibitions, one of ceramics and weaving and another of the paintings of Mr. Edward Hall. The College is most grateful to all who lent their exhibits and to Mrs. Folley and her assistants who took so much trouble in staging the exhibitions. It was particularly interesting to see the delightful collection of the paintings of Mr. Hall whom the College had commissioned to paint a portrait of our Senior Fellow, Sir John Russell, which now hangs in the Library. The programme of College Lectures, which were well attended, is given in Appendix X. It is sad to report that Mr. Carew Hunt, a Fellow of St. Anthony's College, Oxford, who gave such a memorable lecture on the theory and practice of Communism, died soon afterwards and his lecture to the College was probably his last public engagement.

To the College Lectures, Subscription Concerts and Art Exhibitions, as well as to all student concerts and plays, are invited the neighbours and many friends of the College, and through these activities not only is the College given many opportunities which would otherwise be lacking to it but also, through them, it is brought

into closer association with the local community; it is believed, with advantage to both. Few probably appreciate the immense amount of work involved in organizing such activities and the College desires to express its gratitude and appreciation to all those who have been involved therein over the year.

The members of the Senior Common Room, all of whom are Associate Members of the Students' Union Society, give considerable support to its many activities both severally and jointly. Once every three years the S.C.R. produces a Revue, known as the Wardens' Folly; it is intended to amuse the College in general and the actors in particular, and give the more senior members a triennial opportunity of gently pointing out to the undergraduate body some of their weaknesses and oddities. This year the Folly was more ambitious and magnificent than ever and the thanks of the whole College are due to the Wardens and their many willing assistants from Senior Common Room who were responsible for such a witty and amusing evening's entertainment.

Once again it is pleasing to report much enterprise in the field of student travel. A group of horticultural students under the leadership of Professor Miles visited Versailles, the Poultry Science course students visited the Netherlands, the First Year agricultural students organized on their own an extensive English farm tour during the long vacation, and at the same time a group of Second Year students paid a visit to south-west England, under Professor Holmes's leadership. Another small group was organized by Mr. Askew in Lancashire to study farming systems and soils in that part of the country. During this long vacation 24 students went overseas to do their practical work, visiting 10 countries which included countries in Western Europe, the U.S.A., Canada, and East Africa. The contacts which have been built up over the years with farmers overseas have proved invaluable and now make it comparatively easy for students of the College to arrange for long vacation work in many countries, and through such visits greatly to broaden their experience. The College itself found work for three French students and one West German student on the Farm and in the Horticultural Department.

The Agricultural Museum

The Agricultural Museum in the old barn at Court Lodge, Brook, was formally opened in May by Lord Northbourne before a distinguished group of guests who had been invited for the occasion. It can only be regretted that there was not a larger company present to listen to and profit by his extremely moving address on the nature and possible purposes of such a collection of traditional implements

and tools of an age which has passed. The College is, however, delighted by the fact that the Journal of the Museums Association found space to record the whole of his speech in their July 1959 issue (Volume 59, No. 4). The collection, which was augmented during the year by the gifts of several interested neighbours, is now at last most suitably housed and well displayed. It is the intention gradually to expand the exhibition, and as circumstances permit, to make it more representative of the various farm crafts of this part of the country. A great deal of work has been involved in the cleaning, repairing and labelling of the exhibits and the thanks of the College are due to the members of the student Archaeological Society and to the Honorary Curator, Mr. Page, who have done so much in this connection. It may be remembered that the collection was first assembled by Mr. G. H. Garrad and Mr. N. B. Bagenal under the auspices of the Kent Council of Social Service. For a time it was housed in the Old Tithe Barn at Maidstone, later at East Malling Research Station and, when first accepted by the College, in an iron shed at Coldharbour. Few more pleasing permanent sites for it could have been found than in the magnificent old barn at Brook. The Museum was open twice a week during the summer and attracted an encouraging number of visitors.

Benefactions

Benefactions made to the College during the year are severally recorded in Appendix VIII and are here most gratefully acknowledged by the College which has been enriched by the generous actions of those who have thus contributed to its work and well-being. It is particularly gratifying to record two benefactions from producers' marketing boards which, through these two gifts, will be brought into close association with our work and give support to research and investigation into those fields with which they, on behalf of their producers, are so actively concerned. Mention must also be made of the very interesting gift of the magnificent silver punch bowl, cups and ladle. This great bowl, made in 1834, together with a beautifully written list of those who had subscribed thereto, was presented in that year to Mr. Richard Goord of Milton, Thanet, "in appreciation of the services rendered by him in the improvement of the breed of long woolled Kentish Sheep". It was given to the College by Mrs. V. McCredie, the daughter of the late Mrs. Jane Goord who had inherited it from her ancestor. The vellum list of subscribers contains many famous names of Kentish farming families; the bowl itself is a remarkable example of silversmiths' craftsmanship of the period. The College is proud to possess this

memorial to an early breeder who contributed so much to the establishment of our local breed of sheep.

Commemoration

New arrangements for Commemoration were introduced which, it is felt, were a great improvement. In the morning the formal Annual General Meeting of the Governing Body was followed immediately by the annual Service of Commemoration in the Parish Church. This gave time for a more leisurely luncheon which, in due course, was followed by the Reading of Degrees and a most stimulating and forward looking address by our chief guest, Sir Frederick Brundrett, K.C.B., K.B.E., M.A., the Scientific Adviser to the Ministry of Defence and Chairman of the Defence Research Policy Committee, also Honorary Adviser to the Ministry of Civil Aviation and one of the Chief Scientific Advisers to the Prime Minister. Tea, which in former years has been served in very cramped circumstances in the College quadrangles, was taken at Withersdane, giving the College and its great number of guests an opportunity to enjoy, in brilliant weather, the gardens which were looking at their very best. It was a great pleasure to the College to receive amongst its many distinguished guests the Vice-Chancellor of the University, Dr. C. F. Harris and Mrs. Harris, the Principal of the University, Sir Douglas Logan and Lady Logan, and once again our much beloved Senior Fellow, Sir John Russell and Lady Russell both looking as perennially young as ever. There is no doubt that the new plans for the day worked easily and gave to all more time to enjoy each other's company with a sense of leisure which had previously been rather regrettably lacking.

The College Estate and Buildings

Work was started on the completion of the new laboratory block which should be ready for occupation during the summer term of 1960. The new extensions make provision for the housing of the whole of the Chemistry and Geology Departments, part of the Department of Horticulture, and for ancillary research, together with a large lecture theatre. Excellent progress was made by the contractors who were much aided by the good weather. Upon the completion of this major piece of building work, for which the College is deeply indebted to the generosity of the Court of the University, some much needed space in College will become available for re-allocation. Prime consideration will have to be given to the needs of the Library which, with additional student numbers and the ever-increasing numbers of books and periodicals, is becoming greatly congested. Other urgent calls on the available

space will come from the need of increasing the number of lecture rooms, the much needed extra accommodation required for both senior and junior common rooms and for additional staff studies and domestic requirements. The financing of such adaptations will present a number of problems not unfamiliar to those married persons who are weakly persuaded to buy a new hat for their wife only later to find themselves involved in a new handbag, umbrella and probably suit as well. It may be trusted that the University is at least as familiar with problems of this nature as we ourselves.

The new playing fields which had been sown down in the previous year suffered somewhat owing to the intensely hot dry summer, but are nonetheless available for use this autumn. The new pavilion was also completed in readiness for the autumn term and has already begun to settle into the landscape. The costs of building it have been met from the balance of the Quincentenary Appeal Fund from which, it will be remembered, was also defrayed part of the cost of furnishing and embellishing the new Dining Hall, which was completed in 1954. A start was also made on the equipping of changing rooms at Withersdane for the use of visiting teams and these should be in full operation before the end of the autumn term. It will be greatly to the advantage of our visitors to have somewhere near to the playing fields in which to change and bath instead of having to use, as heretofore, the sorely overtaxed student facilities in the College. The sight of J Block on a Wednesday or Saturday after it had been used by its normal inhabitants as well as a couple of visiting football teams had to be seen to be believed.

Almost unnoticed the main College boilers were converted, during the long vacation, to oil firing. There had been some misgivings about both smell and noise as a result of such a conversion but it is particularly pleasing to be able to report that, in operation, the new system has proved to be both unexpectedly quiet and associated with no evil smells. It functions smoothly and economically.

During the long vacation the last of the four Olantigh Road cottages was incorporated with the postgraduate hostel, known as Squires, giving four additional student rooms, and another cottage in the old Flying Horse block which came into vacant possession was converted into three additional undergraduate study bedrooms. During restoration work a most interesting painted beam of the late fifteenth or early sixteenth century was revealed and this has been carefully restored and exhibited.

For several years it had been felt that the arms carved over the main gate of the College were scarcely worthy of the building and the opportunity was taken to recut this panel, the work being

entrusted to Mr. Kevin Cribb, a most experienced sculptor mason. In the place of the former, no longer applicable and heraldically inaccurate, shields of Kent and Surrey supporting the shield of the founder of the College, interwoven with the somewhat improbable leaves of the Kohl rabi plant, the main gate is now graced by a fine piece of stone carving portraying the arms of our founder surmounted by a cardinal's hat.

Routine maintenance work and many minor estate works were carried out during the year, though so brief a statement scarcely does credit to the thought, care and craftsmanship which is devoted to the fabric of the College and its properties by the Maintenance Department, under the Registrar's most able and devoted leadership and so well supported by Mr. Foster, the College Engineer, and his team of craftsmen.

Administration

As is customary, the accounts of the College form the substance of a separate report which has already been published. The College is grateful to the University for a most welcome supplementary grant of £6,000 awarded to it to assist in meeting rising costs.

During the year three College servants of long standing retired; Mr. J. Miles, farm foreman, Mr. F. Dunk, blockman and waiter, and Mr. J. Parker, head gardener. To all three the College desires to express its thanks for long and loyal service and its good wishes for contentment in retirement. Such occasions emphasize how much the College is indebted to those who have served it over the years and given of their best to it. In a society which, it is told, "has never had it so good" *Ich dien* often becomes an all too rare concept.

Arrangements were made for the extension of the voluntary contributory staff pension scheme of which many employees of the College have availed themselves.

The College again received a large number of visitors throughout the year and gave accommodation to a number of conferences (see Appendix XI). It is noteworthy that the College with its relatively limited residential facilities carries a considerable burden in these connections which is proportionately greater than in many larger institutions where the load can be more easily distributed. It is becoming increasingly difficult to find domestic staff who, after the heavy strains of a seven-day service throughout the ten weeks of term time, are prepared to give up Saturdays and Sundays during the vacation to help with heavy and often exacting demands of conferences. The thanks and appreciation of the College are due to the Domestic and Administrative staff on whom falls the main load.

Conclusion

To those of us who are intimately concerned with the ways of the countryside—and this must go for practically everyone who works at and for the College—the year under review will long be remembered for its most wonderful and generous summer, a seemingly almost endless summer of long hot days and soft evenings which made possible that rare pleasure of sitting in the garden watching night fall. Some of us can remember 1911 and 1921, but was not 1959 more perfect or is memory too short? Those whose memory is but beginning will look back, in years to come, on a summer at Wye and in the harvest fields which, as one year succeeds another, will grow in the magnificence of memory and remind them of halcyon days.

Wye, College and village, its farms and downlands, are memories precious to many who have spent their student days in this corner of Kent. And how keenly this was brought to mind but a few weeks ago when the Agricola Club for the first time since the war held its annual dinner at the College, instead of in London in the bleakness of mid-December. It was a most memorable occasion, the size of the company being only limited by the resources of the Hall and kitchens. Over 150 members of the Club dined in Hall. The dinner was presided over by the President of the Club, Sir John Russell, the Visitor of the College, His Grace the Lord Archbishop of Canterbury, being the principal guest. Many had come early in the afternoon to tour the College farms, orchards and gardens, and some 60 accepted the hospitality of the College for the night. The oldest member present had entered the College as a student in 1898; the youngest were those who had only graduated three months before. The company covered a great span of years and of experience yet all had things in common, their memories of Wye and the part the College had played not only in their careers but in the fashioning of their lives.

Sometimes in the routine of teaching, research and administration sight may be lost of the real and vital function of the College, the equipping of men and women to serve the community to the best of their inherent abilities, with judgment, wisdom and with kindly understanding. As one year succeeds another and a new generation of freshmen follows hot-foot on those who have just graduated and gone down, it is sometimes hard to call to mind the futures which lie before them. It is such an occasion as the recent Agricola Club dinner which suddenly brings into high relief the full stature of the College, its importance in the lives of a great many who have passed through it and the essence of its real purpose, to

which those of us who are privileged to serve it are allowed to make our contribution.

Here are "magic casements opening on the foam of perilous seas" and for many of us who serve the College responsibilities and rewards as great as can be found.

DUNSTAN SKILBECK

December 1959.

Teaching

The number of students studying agriculture continued to increase and placed a serious burden on tutors in agricultural subjects and on the organizers of farm field classes. In June 1959 30 students sat the Final Examination for the General degree in Agriculture and 15 sat the Final Honours Examination. Of these 22 and 13 respectively gained degrees. One student gained a First Division in the General degree and two gained First Class Honours degrees. Nine students also sat the examination for the National Diploma in Agriculture; of these 8 gained Diplomas, including one First Class Diploma.

The revised courses put into operation in the previous session proved satisfactory.

As in previous years, in addition to organized farm classes and demonstrations on the College farm, student parties were taken to visit other farms and ancillary industries in the neighbourhood. The College is greatly indebted to farmers and others for their invaluable co-operation in this training.

To broaden the students' knowledge and show them farming under different conditions a week's summer course was held in Devon with the kind co-operation of Seale-Hayne Agricultural College both in 1958 and 1959. In both years this has been attended by about half the Second Year class with members of staff from the Departments of Agriculture, Biological Sciences and Economics. This type of short residential course in a new area has proved very satisfactory and it is hoped to continue in future years.

The new postgraduate course in Poultry Science opened in October 1958 with 10 students. This large entry placed a severe burden on the members of staff concerned but has given encouraging results. In July all members of the course spent a most instructive week under the leadership of Mr. Maddison studying the poultry industry in the Netherlands.

Research

In October 1958 four postgraduate research students joined the Department and after preliminary study embarked on their various programmes of study in the fields of applied plant physiology and animal nutrition. The following brief reports on current work include some of the work of these students.

Feed Intake on Grassland. The winter period was occupied in providing training for the new students in the techniques required and in a study of the influence of quality of forage on feed intake

and digestibility as shown by sheep and cattle. This was followed during the summer period by field studies, carried out under semi-desert conditions, of the seasonal fluctuation in feed intake of wedder sheep and of the influence of size on the intake of grazing cattle. In work of this nature the field operations lead to a considerable amount of chemical analysis, and since this has not yet been completed no comment can yet be made on the results.

Grassland Production. Recent experimental work in Scotland and long-established grazing experience in the Romney Marsh both suggest that a very high yield can be obtained from very closely grazed pastures. Studies have been initiated to investigate the physiological basis of such observations. They have so far confirmed that in certain conditions close defoliation can result in substantially increased yields and indicate that this increase is associated with the increased tillering and the denser root system encouraged by such management. Further work is planned or in progress.

Dairy Husbandry. In 1958-59 a further experiment to investigate the effect of steaming up of autumn calving dairy cows was carried out. This showed even smaller increases in milk yield from steaming up than shown in the previous experiment, referred to in last year's report. Both experiments showed no increase in milk composition attributable to steaming up and indeed the suggestion is that *provided adequate feed in the form of grazing, kale or silage is available* the steaming up of autumn calving cows (as opposed to heifers) is not economically worthwhile. The full explanation of this finding must await the development of methods of determining the feed intake of such cows. The implication is that, as has been shown with milk cows grazing in summer, the extra concentrate intake results in a corresponding reduction in intake of bulk feeds. If the feeds are of equivalent quality no net advantage accrues. Weekly samples of the milk from these experimental cows were fully analysed through the courtesy of the Chief Chemist of the Milk Marketing Board. To study further the possible effect of sub-clinical mastitis on milk composition the samples were also examined for cell count by the Advisory Bacteriologist, N.A.A.S., Wye, and for pathogenic organisms by the Veterinary Investigation Officer, Ministry of Agriculture, Wye. This co-operation is gratefully acknowledged.

Pigs. The new selection programme for carcase length began with the litters farrowed in August 1958. This farrowing was dogged by ill fortune throughout the winter. The after-effect of scours which occurred widely in baby pigs persisted throughout the winter and some families of pigs gave very uneven performances. Accordingly, no selection could prudently be based on the results and a

repeat test was carried out on the spring born litters. As a precaution each sow had in autumn been remated to the same sire as in the spring mating (a considerable achievement of stockmanship) and a complete replicate of the test was available. This group has grown well throughout the summer, disease symptoms have not recurred and selections for the new generation are now being made. In a scheme such as this progress will not be seen for a few years but meanwhile full records of the data are being prepared. During the year cloakroom and toilet facilities were provided for the piggery staff and plans were completed for a new drainage scheme to dispose of the water and effluent from the piggery.

Poultry. Selection for Egg Production. The selection programme has continued and there has been a further increase in average egg production of both flocks. Mortality, particularly in the R.I.R. flock, remains at a low level. As a result of the selection for egg yield alone there has been a definite reduction in egg size in the R.I.R. flock. Since this flock has been selected for many years so that the trend can be reliably predicted, and since the reduced egg size is seriously increasing the cost of the work, consideration is now being given to a change of emphasis in the selection programme.

Egg Quality. The College, with assistance from the British Egg Marketing Board, completed a new building for the study of egg quality early in 1959. Experimental work is now in progress on two aspects. A long term programme has begun to study the extent to which factors affecting egg quality are inherited. In addition some work on the influence of various methods of egg cleaning and storage has been carried out. It should be stressed that the problems of definition and measurement of egg quality have themselves taken up time and are not susceptible to easy solution. So far as they go the experiments indicate that there is little to choose between the methods of wet or dry cleaning investigated *provided they are carried out properly*. The preservation of eggs by dipping or spraying with mineral oil has given encouraging results. The quality of eggs which have not been oil treated has been shown to deteriorate rapidly if they are stored in conditions of high temperature and low humidity; on the other hand, quality can be maintained for long periods under conditions of low temperature and high humidity.

Postgraduate Experimental Work. Facilities have also been provided for students taking the postgraduate course in poultry science to gain experience of experimental methods, and studies have been carried out in various aspects of poultry production including the economics of broiler production, the genetics of lethal characters, the vitamin nutrition of turkey poults and the ventilation of deep litter houses.

Engineering

The re-arrangement of the workshop referred to last year was completed in June 1959. It should now be possible to accommodate the larger classes in greater comfort while repair and construction work may continue, uninterrupted by classes, in the separate repair shop. A separate bay for research studies has also been provided. Development work included the construction of a tubular fruit picking platform which has been tested for a short period by the Commercial Horticultural Department. As in previous years several items of special apparatus have been built for other research workers.

Soil Physics

The work on the performance of tines with different rake angles which is being carried out in collaboration with the National Institute of Agricultural Engineering has now been completed for publication. It has also formed the basis of several public lectures.

Crop Production

Experiments have now been carried out for two years on potato production and white clover seed production. In view of the susceptibility of these crops to weather conditions and the extremes of 1958 and 1959 a detailed report is not yet justified. With potatoes, studies have been made of the effect of chitting the seed, mulching, and level of fertilizer, with and without irrigation, on yield and quality of potatoes. Large effects have been observed but they have varied considerably from year to year.

Work on white clover has included field studies of the effect of grazing or cutting treatment before shutting up the field on the yield of clover seed, and a more fundamental investigation of the factors which cause the induction, initiation and development of clover flowers. The whole study is one which appears to have been neglected by applied plant physiologists and many valuable observations have already been made.

Studies on the utilization of kale by dairy cows have indicated that under normal strip grazing some 20-30% wastage must be expected (increasing to 50% in wet conditions) and that there is little difference in wastage whether the crop is drilled or broadcast, or whether it is marrow stemmed or thousand headed kale.

Extension Work

The College again received many visitors and visiting parties although none of the large technical agricultural organizations made it the focus of their visits during the session under review. A "Food and Farming" conference organized jointly by the University Extra-

Mural Department and the Association of Agriculture in September was attended by 64 people interested in agriculture. A printed Guide to the Department of Agriculture and College farm, the first to be printed since before the war, proved most valuable in presenting a clear picture of activities of the Department.

Extra Mural Activities

Members of the Department gave several lectures to farming and other organizations. In particular, Dr. Payne gave several lectures on the applications of his studies in soil physics to agricultural and engineering problems.

Professor Holmes acted as Internal Examiner for the final B.Sc. (Agriculture) degrees of the University and was Examiner in Agriculture for the B.Sc. (Estate Management) and for the B.Sc. (Agriculture) degrees awarded at the University Colleges in Special Relationship at Ghana, Ibadan and Makerere. He also acted as External Examiner for the Postgraduate Diploma in Agriculture of the University of Cambridge. He served on the Committee on the Composition of Milk appointed by the Minister of Agriculture, on the Programme Committee for the 8th International Grassland Congress to be held in Britain in 1960, and was appointed to the Natural Resources (Technical) Committee, Agricultural Input-Output Study Group and to a working party of the Agricultural Research Council to study the nutrient requirements of ruminants.

Dr. Payne acted as Examiner in Agricultural Engineering for B.Sc.(Agriculture), Old Regulations, as Examiner in Agriculture for B.Sc.(Estate Management), and as External Examiner in Field Engineering for the National Diploma in Agricultural Engineering (New Zealand). He was re-elected for a third and final year to the Council of the Institute of British Agricultural Engineers and continued as a member of the Soils Sub-Committee of the Committee for Colonial Agricultural, Animal Health and Forestry Research.

Mr. Maddison acted as Examiner in Poultry Husbandry for the National Diploma in Poultry and was a member of the National Poultry Diploma Board and of the Agricultural Improvement Council Poultry Committee.

Mr. Innes acted as External Examiner in Field Engineering for the National Diploma in Agricultural Engineering.

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DEPARTMENT OF HORTICULTURE

Teaching

In the 1958 Final Examinations for the degree of B.Sc. (Horticulture) two candidates were placed in Division I and ten in Division II out of the entry of nineteen. Of the two in the first division, one entered the N.A.A.S. and one a specialist horticultural business. Of the ten in Division II, five took teachers' training and educational posts where their subjects included horticulture and botany or rural science, three entered the official research or advisory services, and one each took up landscape gardening, a postgraduate course in economics, and colonial service training. Most of those placed in Division III, having more practical leanings, have taken up work more closely associated with the production and handling side of the horticultural industry. It is encouraging that there is a good demand for graduates in horticulture and that this demand comes both from the official services and from industry. The place of the soundly trained graduate is being increasingly recognized.

The policy designed to make the practical sections serve more fully the changing needs of teaching continues and it is pleasing to record steady progress in each of the sections, as is shown elsewhere in this report. The layout of the new orchards and plantations is now based on modern concepts and only varieties of proved commercial value are now being planted. For the study of varietal differences, identification of rootstocks and the methods of shaping and pruning tree-fruits, the materials in teaching Plot C have proved most valuable and as the content of plot has been diversified year by year it has been increasingly used in teaching. The plot also provides propagation material for the commercial plantations and so serves to demonstrate good nursery practice.

During the session practical and laboratory work was extended to include experiments on such subjects as dormancy in shrubs,

propagation by hard-wood cuttings, the production of disease free material and methods of seed testing for seed-borne disease. It is now planned to extend this type of study to deal in more scientific details with methods for environmental control in glasshouse crop production. The close co-operation which exists with the Department of Botany is making it possible for both theoretical and practical training in many aspects of horticulture to be more effective.

The College is fortunate in its good neighbours, many of whom permit visits by parties of students to their estates and gardens for the purpose of study. The Department especially acknowledges the privilege of visiting:

Olantigh Towers
Mersham Park
Eastwell Park
Brattles Grange, Brenchley
Sissinghurst Castle
Ladham House, Goudhurst
The Grange, Benenden
Great Dixter, Northiam
Sandling Park, near Hythe
The Salutation, Sandwich
Bedgebury Arboretum
Hothfield Bog

A small party of second year students visited Lincolnshire during the vacation under the leadership of Mr. J. T. Sykes. An interesting and diverse programme was organized with the assistance of Mr. Robert Waugh, a former Wye student. The third year horticultural tour at Easter was centred on Versailles. The party, led by Professor Miles and Mr. Jackson, visited important horticultural establishments in the Paris region, the propagation centre for the parks of the city and several notable parks. The visit to the National Agricultural Research Centre at Versailles was of special interest. The help of the Director of the School of Horticulture at Versailles, Monsieur Lenfant, and his staff in making arrangements is gratefully acknowledged.

The College has been able to offer some opportunity for foreign and overseas students to gain a knowledge of English horticulture during vacations or as "occasional students" for longer periods. During the past few years students from several European countries have worked at Wye, often in part fulfilment of the practical requirements of their own organized courses. While those from France and the Netherlands have been the most numerous, the College has also

been able to welcome students from Belgium, Germany, Italy, Denmark, Finland, Norway and Sweden, and Turkey.

Research

Two lines of investigation into the problem of *Gloeosporium* lenticel rots in stored apples have now been concluded. Studies into certain orchard factors related to this problem were described in an M.Sc. thesis by Mr. L. J. White. Further work on the control of lenticel rots by the use of a volatile organic fungicide was carried out by Dr. Wilkinson, kindly assisted by Dr. Spencer, during the 1958-59 storage season. Detailed results have been published and should serve as a basis for further investigations under normal commercial storage conditions. An experiment was also started on the effect of the time of pruning on the incidence of *Gloeosporium* rots in stored apples.

It is pleasing to report that the experimental orchard-plot established in 1953, to study the effect of nitrogen and water on the establishment of apple trees, is being maintained thanks to the award of a research grant from the Agricultural Research Council. It is hoped that this support will enable the investigations to be continued until 1962. Preliminary results were presented in 1958 in a thesis on which Mr. V. D. Arthey was awarded an M.Sc. degree. Mr. Arthey's services have been retained to assist Dr. Wilkinson with this work. Mr. G. G. Thomas continued his studies on the Blackcurrant particularly in relation to fruit bud initiation, dormancy and the development of an intensive method of propagation. The results of this work will be presented in a thesis which he is preparing.

In continuation of the department's investigations into factors affecting crop production under Dutch lights, Mr. Jackson has studied the local influence of the weather experienced at Wye over the period 1951-58. He has been able to show the value of the lights as protective structures not only during bad weather but also during periods of excessive or continuous wind when the lettuce crop in particular is likely to suffer serious physical injury that affects alike immediate development and market quality. He is also continuing his investigations on management and productivity of unheated mobile glass and the selection and improvement of vegetable crops. Selections from the new varieties of brussels sprouts raised at Wye are to be included in forthcoming N.I.A.B. trials. Mr. S. Beresford, who was awarded the Gardeners' Company Fellowship, will continue to work with Mr. Jackson on the relationship between parent plant nutrition and seed quality in garden beet.

Experimental work on the production of rooted cuttings of ornamental and economic plants, otherwise difficult to propagate, has made good progress and with the use of improved equipment and supplementary lighting the work can be continued during the winter months. The apparatus for this work has been housed in the service section of the conservatory block, but as its more continuous use demands extensive waterproofing it is hoped to re-site it in due course in a special experimental propagating house.

With the use of our present misting apparatus, Mr. J. T. Sykes and Dr. I. H. Williams of the Hop Research Department have shown that there is an optimum level of bottom heat necessary for rooting hop cuttings. Their results were presented in a paper entitled "Factors affecting regeneration from cuttings using mist technique" given by J. T. Sykes at a symposium of the Association of Applied Biologists on "Recent Advances in Plant Propagation". Dr. P. C. J. Payne (Agriculture Department) has improved the operation of our present mist installation by providing a different type of circular moisture detector or "electronic leaf". This new device has functioned most satisfactorily since January 1959. The mist propagation unit has also been used to build up clonal stocks of a range of *Diervilla* species which will be used to study the effect of supplementary lighting on flower initiation. Miss E. Emmerson has continued her studies of the genus *Pelargonium* and has investigated the effect of day length on growth and flowering. This work was carried out in temporary light chambers in greenhouse No. 12 pending the provision of more permanent light chambers now completed in the new departmental laboratory.

Work in horticultural entomology has concerned the biology of the root infesting flies and sawflies injurious to horticultural crops. The behaviour of earwigs in orchards and the seasonal occurrence of Codlin moth have also been under observation and Mr. Anwarul Azim has investigated means of assessing the population of these insects.

On behalf of the College the Department was responsible for arranging two small conferences during the year, one on the problems of marketing orchard fruit and the other to review the advances being made in plant propagation with the aid of mist technique. The first conference which was widely representative gave an excellent opportunity of discussing a subject of great complexity in an informal atmosphere. The brief summary of its findings and recommendations received most encouraging support from the Press. The conference on the use of mist in the vegetative propagation of plants was arranged for those concerned on the one hand with the technological aspects and on the other hand with biological aspects of the

subject. The sessions were well supported by the Research Stations, Experimental Husbandry Stations, the R.H.S. and Botanical Gardens and the members of firms and the nursery trade. Both conferences were appreciative of the initiative shown by the College in convening them and hoped that, as and when appropriate, similar meetings would be arranged in future.

Extra Mural Work

Mr. Jackson assisted a joint Universities Committee of the Horticultural Education Association to plan and stage an exhibit dealing with University work in horticulture. The exhibit was well patronized and many enquiries were received about training for and careers in horticulture. He also attended a two-day conference in London on pre-packaging and its impact on vegetable production in Britain. Mr. Sykes visited the Botanical Department of the British Museum to study procedures for plant preservation in preparation for the establishment of a small herbarium of specifically horticultural plants at Wye.

Professor Miles attended the Floralies Internationales at Paris in April 1959 by invitation and acted on the panel of judges.

In addition to lectures to local horticultural societies in which all members of staff co-operated, Mr. Jackson lectured on trends in the cropping and management of protective structures at Chichester, Guildford and Sevenoaks and assisted at official meetings arranged by the N.A.A.S. Professor Miles lectured on aspects of horticultural education to the S.E. Branch of the Association of Parks Administration, to the Landscape School at University College, London, and to members of Studley College, Warwickshire. He also addressed the Society for the Promotion of Nature Reserves on Nature Conservation in the U.S.A.

As in past years senior members of the department acted as examiners for the Final B.Sc.(Horticulture) in the University. Dr. Wilkinson examined for higher degrees in the University, acted as external examiner in the University of Reading, and served as a member of the Board of Studies in Agriculture and Horticulture. Mr. Jackson again assisted the Royal Horticultural Society by acting as examiner at the Horticultural Institutes in Yorkshire, Kent and Isle of Ely.

Professor Miles was an external examiner for the Universities of Glasgow and Birmingham. He continued to serve as Chairman of the University Board of Studies in Agriculture and Horticulture and as that Board's representative on the Faculty of Science, and also served on the University Boards of Studies in Botany and Zoology

and the Special Advisory Board in Genetics. In addition he continued to serve on the Governing Body of East Malling Fruit Research Station and was recently appointed the University representative on the Governing Body of the National Vegetable Research Station at Wellesbourne.

Publications

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DEPARTMENT OF BIOLOGICAL SCIENCES

Teaching

With the equipping of a Small Animal House it will now be possible to introduce practical experiments in animal breeding into the agriculture degree courses. Several genetically distinct lines of mice have been acquired and it is proposed to include studies on these animals in the Second Year Honours Agriculture course next Spring. Together with the *Primula sinensis* experiments in plant breeding, the Department is now able to present first-class teaching material in its genetics courses. The time-tabling of the genetics lectures to Agriculture (Honours) and Horticulture students has been modified so that lectures on genetics are now given in the Second Year, leading on to lectures in Animal Breeding and Plant Breeding respectively in the Third Year.

Through the co-operation of Professor Miles and his colleagues,

a closer integration of Horticulture and Horticultural Botany has been achieved in the Second Year courses, which has strengthened both subjects to the benefit of the students.

An attempt has been made to restyle the practical classes in Botany in the Second Year of the Honours course. Students have been encouraged to undertake more individual work with less close supervision. To this end a new practical course was introduced on the physiology of legumes and nitrogen fixation. Such efforts to foster the concept of an Honours degree course as understood in the pure sciences are difficult to maintain, however, since there is no opportunity for specialization in the degree courses and the time available for laboratory studies in any one subject is severely limited. In plant pathology especially, the teaching time has been found inadequate to bring students to a level which might be expected of Honours graduates.

During the year lectures were given by Dr. Eve Billing of the N.A.A.S. at Wye, Dr. Williams, Mr. Neve and Dr. Darling on special aspects of Bacteriology, Plant Physiology, Plant Breeding and Tropical Crops. The normal lecture courses were enriched by the insemination of their specialized knowledge and the Department is grateful for their help.

Research

Facilities for the work planned on tumour-viruses in poultry have been developed during the year. The most important of these is the acquisition of a small animal house which is being equipped with a brooder for maintaining about 200 chicks. The Central Research Fund of the University has provided an excellent research microscope on loan for use in connection with this work.

Investigations have been started into the developmental pathology of chick embryos resulting from the presence of a lethal gene, "talpid", the occurrence of which in the College flock was discovered by a Poultry Science M.Sc. student, Mr. Peter Hunton.

An intensive study of the behaviour of Tomato Spotted Wilt virus in tomato seedlings has been continued with growing plants in standard nutrient solutions in the controlled growth rooms. The course of infection in all parts of the plant has been followed over a three-week period. Parallel studies on growth and quantitative chromatographic estimates of the free amino acids and amides present in leaves and stems are leading to an understanding of the metabolic changes associated with infection, not hitherto obtained with any other plant virus disease. In this connection the Department is once again indebted to Messrs. Fisons Ltd. for renewal

of the Fison Research Fellowship at present held by Mr. M. R. Brierley.

Work has continued on the physiology of tomato plants infected with the wilt-inducing fungus *Verticillium*. Evidence has been obtained which suggests that blockage of the vessels by tyloses may be induced by an accumulation of growth substances in the tissues of the affected plant.

Extra Mural Activities

The College was represented at a Conversazione of Mycologists at Imperial College by four members of the Department and an exhibit of current mycological studies made in the Department was presented. Dr. Ede gave a short practical course in the Dissection of the Guinea Pig at the Kent Farm and Horticultural Institute as part of the Easter Course for Rural Study Teachers.

Members of the Department have attended numerous meetings which included those of the Society for Experimental Biology, the Society for Immunology, the Society for General Microbiology and the Association of Applied Biologists.

Miss F. Schimmer has again devoted many leisure hours to the preparation of the Agricola Club Journal, owing to the absence of the Editor abroad. Students past and present are grateful to her for this exacting voluntary task.

Dr. Selman and Mr. Harrison served as members of the University Board of Studies in Agriculture and Horticulture, the former acting as Secretary to the Board. Dr. Selman also served on the Board of Studies in Botany.

During the summer vacation two members of the Department visited the U.S.A. and Canada. Dr. Pegg was away for three months and during this time spent three weeks working and lecturing at the Connecticut Agricultural Experimental Station and two weeks working in the Departments of Pathology and Biochemistry in the University of Wisconsin. Visits were also made to six other Universities in the U.S.A. and Canada and useful contacts made with many research institutes concerned with the field of plant pathology. At the International Botanical Congress in Montreal Dr. Pegg read a paper on "The role of indole-3 acetic acid in the development of disease symptoms in *Verticillium* wilt of tomato".

Dr. Selman spent two weeks in the United States and two weeks in Canada visiting research institutes in New York and Washington and University Departments in New York State, Pennsylvania and Ontario. A demonstration of work on the Spotted Wilt Virus disease was presented at the International Botanical Congress, Montreal, and a lecture was given at Cornell University.

Staff

In June 1959 Dr. D. A. Ede was granted Recognition as a University teacher in Zoology.

Miss Eleanor Bell was granted the degree of Ph.D.(Glasgow) for a thesis entitled "The development of *Diplostomum phloxini* in vivo and in vitro". In August 1959 Dr. Bell resigned to take up an appointment with the Virology Unit, Ruchill Hospital, Glasgow.

Mr. G. F. Pegg was awarded the Ph.D. degree (London) for a thesis entitled "An analysis of the effects of *Verticillium albo-atrum* on the tomato plant". Dr. Pegg was promoted to Lecturer in Botany on 1st October 1959.

Examinations

In May and June Dr. Selman visited West Africa as visiting examiner in Agriculture for the final examinations held at the University Colleges of Ibadan and Ghana respectively. Dr. Selman also acted as Chairman of Examiners for the First Examination in Agriculture and Horticulture, and members of the Department again served as Examiners for the several University Examinations in Agriculture and Horticulture.

Publications

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Pegg, G. F., and Selman, I. W. "An analysis of the growth response of young tomato plants to infection by *Verticillium albo-atrum*. II. The production of growth substances." *Ann. Appl. Biol.*, **47,** 222-231. 1959.

Selman, I. W., and Buckley, W. R. "Factors affecting the invasion of tomato roots by *Verticillium albo-atrum*." *Trans. Brit. Mycol. Soc.*, **42,** 227-234. 1959.

Teaching

The large number of First Year students has again made heavy demands on teaching facilities. The new Chemistry laboratory (1st stage) has been able to accommodate the classes required. Accommodation in the old Chemistry laboratory where Second Year work is carried out, whilst satisfactory for the Agriculture Honours and Horticulture students, was grossly inadequate for the larger numbers taking the general Agriculture course. This difficulty will be intensified next session and it may be necessary to divide this class for Chemistry practical work. Again, in Geology the pressure on laboratory accommodation has been acute both in First and Second Year general work. It is indeed satisfactory to see the new laboratories developing so well though these, unfortunately, cannot help with the above problems until October 1960.

The equipment for teaching work in the Department has been adequate and the provision of new microscopes has greatly facilitated the running of practical classes in Geology.

In the First Year general course, considerable modifications were made in the teaching of inorganic and physical Chemistry and organic Chemistry now forms the major part of the course. There is already evidence that the changes made have resulted in a more satisfactory approach and one which will undoubtedly provide a good foundation for the studies of applied aspects in the Second and Third Year work.

A number of Honours Agriculture students showed particular aptitude for Agricultural Chemistry and five of them chose topics within this field for the Special Study which is examined at the Final degree examination.

Several geological excursions were arranged for First Year students during the session. The number of Second Year field classes in pedology had to be substantially reduced due to timetable pressure, but a very successful week of field studies, arranged in Lancashire during the summer vacation by Mr. Askew, provided a well worth while alternative for students particularly interested in this aspect of the course.

The introduction of the M.Sc. course for poultry students led to provision by the Department of a series of lectures on Biochemistry and Nutrition which continued throughout the session, together with a practical course in the spring term.

Visits were made by students to the soil, plant and microbiological sections of the National Agricultural Advisory Service

at Wye and thanks are due to the staff concerned for arranging demonstrations on these occasions.

Research

The close collaboration between teaching staff and the Agricultural Research Council Unit has continued. Research students also make an important contribution in relation to the broad research programme of the Department. In some of our more fundamental investigations, in which team work is essential and which may cover a period of several years, it is common for five or six workers to collaborate. In this way a number of disciplines are brought together in the final publication of the work.

As noted in the last report, the Department and Unit have acquired a useful range of precision instruments enabling the application of modern physico-chemical techniques to the problems under investigation. During the session a Craig counter current extraction apparatus and a high speed refrigerated centrifuge have been purchased. The former is being put to good use in the work on the broad bean antibiotic and the latter is being used for enzyme studies.

Accommodation for plant physiological and pathological aspects of our research has been inadequate for the past few years and it is gratifying to report that an extension of the present research laboratory has been approved.

Thanks are again due to May & Baker Ltd., and to Shell Chemicals Ltd., for supporting investigations within the Department by the continued provision of their Research Fellowship and Scholarship respectively.

Dr. Smith has continued her work on structure/activity relationship in the field of plant growth regulators and is investigating the effect of a new type of substituent in this connection. Dr. Mattok has been synthesizing a new group of organic substances which are of interest in relation to the broad field of investigations on fungicides proceeding in the Department. He has completed his work on the importance of physical properties of growth substances in relation to their physiological activity in certain plant species. Dr. Rickard has been investigating the effect of certain enzyme inhibitors on the breakdown of aryloxybutyric acids by β-oxidation in plant tissues. Dr. Fawcett has continued his work on the isolation of the antifungal material present in broad bean seedlings. This problem has proved to be more complex and difficult than was first thought, but with the application of new techniques, more rapid progress is expected. Dr. Clarke has completed the synthesis of a new series of plant growth substances and, with Mr. Dye, has identified the

hormone present in gall tissues growing on tomato in response to infection with *Agrobacterium tumefaciens*, as indolylacetic acid. Mr. Dye has also been concerned with investigations on various compounds as selective bactericides. Dr. Wightman, who left the Department in December 1958, completed his work on the growth promoting properties of indolecarboxylic acid homologues and other indole compounds. Dr. Spencer has been responsible for biological aspects of the work on the bean antibiotic. He has also carried out further investigations with our series of volatile fungicides and, with Mr. Carter, has examined the fungicidal properties of root exudates from a number of plant species. Mr. Taylor has continued his investigations with bacteria isolated from soil and has demonstrated their capacity to degrade certain substituted fatty acids by β-oxidation. He has also carried out a number of biochemical studies. Dr. Simpson completed his investigations with gibberellic acid and made a study of the germination inhibitor which he found to occur in the seed of wild oat. He was awarded the degree of Ph.D. by the University in July. Mr. Williams continued his metabolism experiments with rats and the provision, during the session, of a properly equipped animal house greatly facilitated this work. Mr. Garraway, who joined the Department from King's College in October 1958, has been concerned with the synthesis and examination of a range of carboxylic acids derived from dialkyldithiocarbamates. These compounds are of interest as potential systemic fungicides. Mr. Cozens has been responsible for most of the bioassay work since the departure of Dr. Wightman.

Mr. Askew has made excellent progress in his field studies of the soils of Romney Marsh and this work is now nearing completion. Mr. Dalrymple has been engaged on the correlation of the laboratory and field results of his investigations on the Brick Earths of Kent. A considerable number of thin sections have been made from the samples collected.

Miss Ingram has continued her studies on soil structure in relation to manurial treatment and this work will shortly be completed. Mr. Carling, in addition to his analytical and teaching duties, has investigated a semimicro method for the estimation of cyanogenetic glycosides in plant tissues. Mr. Ayed has studied the uptake of mineral nutrients by plants following the application of certain chelating compounds to the soil.

Examinations

Professor Wain, Dr. Smith and Mr. Askew were appointed examiners for the degrees of B.Sc.(Agriculture) and B.Sc.(Horticulture) of the University of London. They also acted as examiners

for degrees, awarded in Special Relationship with London, at University Colleges overseas. Professor Wain acted as examiner for Higher degrees in a number of Universities and as External Examiner for the B.Sc. degree in the University of Glasgow. Mr. Askew acted as examiner for a candidate for the degree of Ph.D. in the University of Durham. Both Professor Wain and Mr. Askew were External Examiners for the degree of B.Sc.(Agriculture) of the University of Khartoum.

Staff Changes

Dr. Wightman left the A.R.C. Unit in December 1958 to take up a Post Doctoral Research Fellowship in Plant Physiology at the University of Saskatoon, Canada. He was replaced by Dr. Wright who joined the Unit from the University of Birmingham in April 1959. Miss Bates, May & Baker Research Fellow, left the Department in October 1958 to take up an appointment with the Pest Infestation Division of the Ministry of Agriculture. Mr. Carter, a plant pathologist, joined the A.R.C. Unit and Mr. Garraway became May & Baker Research Student in October 1958.

Extra Mural Activities

Professor Wain was in West Africa from January to March as Nuffield Visiting Professor at the University College of Ibadan. He made tours of the Northern and Eastern Regions and saw much of agriculture and agricultural research in Nigeria.

Professor Wain, Dr. Smith and Dr. Fawcett visited the United States in August to attend the International Conference on Plant Growth Substances in New York. Professor Wain was also in Miriden, New Hampshire, for the meeting of the American Association for the Advancement of Science and both he and Dr. Fawcett attended the International Botanical Conference in Montreal.

During the year, Professor Wain served as a member of the Visiting Group appointed by the Minister of Agriculture to report on the Pest Infestation Laboratory at Tolworth. He was also appointed to serve as a member of the Agricultural Panel of the Colonial Advisory Council of Agriculture, Animal Health and Forestry. The Royal Institution nominated Professor Wain as Salters' Lecturer for 1959.

Dr. Smith and Professor Wain continued to serve as members of the University Board of Studies in Agriculture and Horticulture. Professor Wain also served on the Boards of Studies in Chemistry, Botany and Veterinary Science and on the Board of the Faculty of Science. During the year he was elected a member of the Council of the Royal Institute of Chemistry. He continued as a member of the Agricultural Research Council's Standing Committee affecting

Plants and Soils, as a member of the Governing Body of the Glasshouse Research Station, the Colonial Pesticides Research Committee and on a number of other committees. Professor Wain continued to serve as a member of the Selection Committees appointed to recommend the award of University postgraduate studentships and Agricultural Research Council postgraduate scholarships.

During the session, Professor Wain gave the following lectures:

"Recent advances in plant disease and weed control." Colonial Directors of Agriculture Conference, Wye (September 1958).

"Some chemical aspects of research on plant growth substances." Chemical Society, King's College, University of London (October 1958).

"Systemic fungicides." Royal Institute of Chemistry, London (October 1958).

"Crop protection." Royal Technical College, Salford (October 1958).

"Plant growth substances." Chemical Society, Bedford College, University of London (October 1958).

"Selective weed control." College of Technology, Coventry (November 1958).

"Some aspects of agricultural research in Britain." Moor Plantation, Ibadan, Nigeria (January 1959).

"Chemical structure and biological activity relationships." Department of Chemistry, University College, Ibadan (January 1959).

"Recent research on the chemical control of plant diseases." Department of Botany, University College, Ibadan (February 1959).

"Research at Wye College on plant growth substances and systemic fungicides." Department of Agriculture, Northern Region, Samaru, Nigeria (February 1959).

"Plant growth hormones." West African Institute for oil palm research, Benin, Nigeria (February 1959).

The Nuffield Lectures:

"The importance of agricultural science from the world viewpoint."

"Some recent developments in agricultural science." University College, Ibadan (March 1959).

"Some chemical aspects of crop protection." College of Technology, Bristol (April 1959).

"How plants grow." The Royal Institution Salters' Lecture, delivered to VIth form pupils from schools in London and the Home Counties on four separate occasions during May and June 1959.

"Some considerations on chemical structure/biological activity relationships." American Association for the Advancement

of Science, Gordon Conference, Miriden, New Hampshire (August 1959).

"Some recent research on plant growth regulation." Cornell University, Ithaca, New York (August 1959).

"The oxidative metabolism of indole auxins." International Botanical Conference, Montreal (August 1959).

"Recent advances in the chemical control of plant diseases." Queen's University, Kingston, Ontario (August 1959).

Mr. Williams organized a course of five lectures for VIth form pupils of the Ashford Boys' Grammar School on "Agriculture and Agricultural Science". Mr. Askew, Mr. Williams, Professor Wain, Mr. Ward and Dr. Duckworth took part. Professor Wain gave a talk on "Agriculture in West Africa" at the Simon Langton Girls' School, Canterbury, and also gave a course of lectures on Crop Protection to agricultural students in the University College of Ibadan. Dr. Smith and Mr. Askew gave a lecture course on soils at the School of Town Planning in London during the autumn term. Mr. Dalrymple attended the International Conference on Soil Micromorphology in Braunschweig, Germany, in November 1958 and presented the following paper: "Some micromorphological implications of time as a soil forming factor, illustrated from sites in South-Eastern England".

Mr. Askew gave the following lectures:

"The Geographical significance of soils." Brighton Geographical Association (February 1959).

"Development of the Romney Marsh Landscape." Economic History Society Conference, Wye College (April 1959).

"Soils of the Weald." Eastbourne Geographical Association (April 1959).

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Askew, G. P., and Green, R. D. "Romney Marsh Soil Survey Report." *Soil Survey of Great Britain Report No. 10.* 1958, p. 21.

DEPARTMENT OF AGRICULTURAL ECONOMICS

Teaching

Internal teaching in both the pure and applied aspects of economics is now at a high level, taking up a substantial proportion of the working time of the Department's academic staff. It involved the giving of lectures, and tutorials, and the overseeing of project work in the three degree courses and the postgraduate course in Poultry Science, together with the supervision of postgraduate students. Ten members of the academic staff of the Department are concerned with this work.

Research and Investigational Work

Land economics. Recent research work in the field of the economics of rural and urban land use, with particular emphasis on cost-benefit analyses related to land reclamation and improvement, has been integrated into a single publication, "Agriculture and Urban Growth", G. P. Wibberley, Michael Joseph Ltd. (in the press). Studies of recent developments in the values of farm land and in farm rents have also been put in permanent book form, "Farm Rents and Tenure", J. T. Ward, Estates Gazette, June 1959. An appreciation of the pattern of land uses in Great Britain has been prepared, "The Major Land Uses of Great Britain", R. H. Best, Wye College Departmental Report (in the press).

Horticultural economics. A study being made of the character and competitive strength of British horticulture (R. R. W. Folley) suggests that only some smaller horticultural holdings and some crops are vulnerable to greater overseas competition; that tariffs play a very minor part amongst the economic forces acting on the industry, and that the vulnerability of certain crops could be removed by improved organization of production.

A study of ten years' records of apple and pear yields now being brought to completion (R. R. W. Folley and W. L. Hinton) suggests that in spite of technical progress in fruit growing the trend of yields is not upwards.

Investigation into soft fruit production as practised by a small colony of growers in East Sussex was concluded with the publication of a report entitled "Specialized Soft Fruit Holdings" (W. L. Hinton). It showed that a five-acre soft fruit holding can and does provide a living equivalent to that of a small general farm; that the capital requirement is low but so also is the labour productivity, and that without livestock on the holding there is little opportunity for profitable work in winter.

A final report on the economic problems of orchard establishment, as experienced over the period 1947-59, is in its final stages (R. R. W. Folley). Indications are that M.IX filler trees are advantageous, and that closer planting of trees would improve financial returns because the return per tree tends to be constant whereas costs per tree are reduced as the density of planting increases.

Farm economics. Work arranged with the Ministry of Agriculture in connection with the national Farm Management Survey has proceeded according to plan (J. D. Sykes in charge, field staff J. H. Hooper and K. L. Oake). Developments in the work include a growing interest amongst co-operators for farm management analyses and advice. Enterprise studies in the production of beef

(E. S. Clayton), barley and potatoes (G. Allanson and J. B. Hardaker) are also being carried out as part of the general survey.

A report is in preparation on the economic strength and weakness of the Kent breed of sheep (G. Allanson). Post-war changes in the demand for mutton, lamb and wool and the pattern of subsidy payments are having important effects on this localized but internationally well-known breed. Research in dairy economics is actively concerned with the flexibility obtained by successful dairy farmers in relation to yields and systems of feed supply (J. D. Sykes and G. Allanson).

The commercial performance of the College farm receives an annual economic appraisal and better systems of recording and reconciliation have been introduced so that forward budgeting can be extended. Plans have been laid to produce a published record of the post-war experiences of the farm in relation to management accounting systems and farm planning problems of large farms (J. D. Sykes).

Following the completion of his M.Sc. degree dealing with research methods in production economics, G. Tyler is pursuing the application of linear programming to model farm situations found in the South-East of England.

There is a growing interest in the Department in problems of agricultural economics in underdeveloped areas, particularly Africa, through the contacts which the College now has with the African University Colleges through the appointment of E. S. Clayton, formerly agricultural economist to the Government of Kenya, as a lecturer at the College. His particular research interest relates to the economic progress of the peasant farm in East Africa as it moves from a subsistence to a market economy.

Farm Management Liaison Work

During 1958-59 advisory work amongst farmers was dominated by the preparation and execution of the Scheme for Small Farmers. Initially it was thought that such a scheme would afford an admirable vehicle for the introduction of Farm Management advice to many farmers. It might, indeed, still serve such a purpose. But the present pressure of work upon many District Officers in whose area a high proportion of the small farmers lie has made it difficult for them to produce the necessary detailed financial and physical plans. In so far as the periodic revisiting is now about to start this pressure is likely to be maintained.

A briefing course was organized in January 1959 for N.A.A.S. Advisory and Executive Officers of the sub-Region, demonstrating simple techniques of business analysis and capital budgeting likely

to be possible in the circumstances usually found on small farms. Since the initiation of the scheme, requests for joint consultation with the N.A.A.S. have decreased, but they have increased from other sources such as bankers, accountants and direct approaches by farmers.

Some 30 lectures and talks on Farm Management were given; two of these were included in the sound and television programmes of the B.B.C., being the first time that the subject of Farm Management had been a specific topic in the T.V. farming programme.

A pamphlet entitled "A Guide to the Economy of Pig Production" was published in January 1959 (J. D. Sykes); it has achieved the same wide success as that enjoyed by its earlier counterpart, "A Guide to the Feed Economy of the Dairy Farm". Some 1,600 copies of the pig pamphlet, and 7,000 copies of the dairy pamphlet have now been distributed.

Staff Changes

Mr. E. S. Clayton was promoted to Lecturer Grade B and Mr. J. B. Hardaker appointed as a postgraduate research assistant in the Department.

Extra Mural Activities

Dr. G. P. Wibberley gave a course of 20 lectures (postgraduate) in land economics at the combined Land Economic Institute held at the University of Illinois, U.S.A., from June to August 1958. He also attended the International Conference of Agricultural Economists, Mysore, India, and visited the University Colleges of Rhodesia, East Africa, and Sudan at the request of the University. During the year he acted as external examiner for the African University Colleges and the University of Khartoum, and examined for the D.Phil. at the University of Oxford. He served as a member of the Inter-University selection boards for University and research posts in Africa and on the Boards of Studies in Economics, Agriculture and Geography in the University.

Mr. R. R. W. Folley served as a member of the Board of Studies in Economics in the University of London. He was also invited to Holland by the Dutch Central Cooperative Association to investigate the economics of the Dutch tomato industry in July 1959.

Mr. I. G. Reid was granted Recognition as a University teacher. He attended the International Conference of Agricultural Economists at Mysore, India, and acted as external examiner in Farm Management postgraduate diplomas at the Universities of Leeds and Reading and at the Essex Institute of Agriculture.

Mr. J. D. Sykes acted as Local Secretary for the Conference of the Economic History and Agricultural History Societies held at the College, and visited the University of Wageningen and Landbouw Economisch Institute at The Hague. He assisted in the preparation of a report on problems of scale in labour and machinery use on farms for the National Resources Technical Committee.

Mr. J. T. Ward was granted Recognition as a University teacher. He gave a course of lectures in Applied Economics at Cardiff under the auspices of the University Extra Mural Department, in 1959.

Mr. R. H. Best organized and led for the Geographical Association a study tour in South East England.

Publications

Books:

Ward, J. T. "Farm Rents and Tenure." Estates Gazette Ltd., June 1959.

Wibberley, G. P. "Agriculture and Urban Growth." Michael Joseph Ltd. (in the press).

Wibberley, G. P. "The Recent History of Land Use." Chapter in "The Biological Productivity of Britain." Institute of Biology, December 1958.

Wibberley, G. P. "Land Planning and Agriculture in Britain." Chapter in "Modern Land Policies." University of Illinois, U.S.A. (in the press).

Wibberley, G. P. "Agriculture and Town Planning," Chapter in "A Half Century of British Town Planning." University of Liverpool (in the press).

Departmental Reports:

Reid, I. G. "The Small Farm on Heavy Land." September 1958.

Sykes, J. D. "The Recession in Farm Profits in South East England." September 1958.

Sykes, J. D. "A Guide to the Economy of Pig Production—Breeding and Rearing." February 1959.

Hinton, W. L. "Specialized Soft Fruit Holdings." Economics of Fruit Farming No. 4. March 1959.

Best R. H. "The Major Land Uses of Great Britain" (in the press).

Articles:

Allanson, G. "More Sheep." *Agriculture*, Vol. LXV, No. 6, September 1958.

"Profits from Sheep." M.A.F.F. Press Circular Service.

Best, R. H. "The Loss of Farmland to other Uses in England and Wales." *Town and Country Planning*, **26**, November 1958.

Clayton, E. S. "Machinery Depreciation and Farm Accounts." *Farm Mechanization*, September 1958.

"Ways to Farming Prosperity." *East African Farmer and Planter*, November 1958.

"Farm Efficiency in Kenya—Machinery Costings." *The Kenya Farmer*, November 1958.

"Policies affecting Agrarian Development in Kenya." *East African Economic Review*, January 1959.

"Safeguarding Agrarian Development in Kenya." *Journal of African Administration*, July 1959.

Folley, R. R. W. "Is Horticulture Expendable?" *The Grower*, 4th October, 1958.

Reid, I. G. "Method and your Management." *Modern Farming* (Boots Ltd.), **28**, October 1958.

"Farm Management," a series of articles. *National Federation of Young Farmers' Clubs*, 1959.

"The Small Farm on Heavy Land." *Agriculture*, May 1959.

"Management in Horticulture" (with L. G. Bennett), *Essex Institute of Agriculture Technical Publication*, 1958.

Sykes, J. D. "Summary of Output and Expenditure and Standards of Efficiency for farms in South-East England 1957/1958." *Farm Management Handbook Supplement*, January 1959.

"Measuring Efficiency in Pig Breeding." *Farmer and Stockbreeder*, February 1959.

"The Costs of Pig Breeding and Rearing." *The Farming Reporter*, June 1959.

Ward, J. T. "A Reconsideration of the Theory of Rent." *Estates Gazette*, 6th December 1958.

"A New Peak in Farm Prices." *Estates Gazette*, 31st January 1959.

DEPARTMENT OF HOP RESEARCH

Hop research continued to make progress during the year. In addition to developments along well-established lines in plant breeding, field experimentation and chemistry, newer fields of research are being explored in pathology, crop growth and propagation. The Department is also collaborating with the National Institute of Agricultural Engineering in work on problems involved in the mechanical picking of hops and in hop drying. These and other aspects of hop research at Wye are discussed in detail in the

eleventh annual report of the Department, the publication of which was much delayed by the printing strike.

The establishment of the new Withersdane hop garden continued satisfactorily. During the winter of 1958-59, wirework was erected over the new height and spacing trial which is to be harvested experimentally for the first time in September. Much of this trial will be picked by the new machine as part of a detailed study on methods for the mechanical harvesting of experimental plots. Wirework was also erected in Withersdane on the site for a new manurial trial. The remainder of the garden, comprising a range of experimental plots, was planted using light poles. Permanent wirework is to be erected over this area in the coming winter.

The 1958 College hop crop was sold during the year under review; it proved to be of excellent quality, being valued in the grade one class. The 1959 crop developed well in spite of a very dry summer and yields are expected to be satisfactory and resin content to be above average.

The gratitude of the College is expressed to Messrs. Arthur Guinness, Son & Co. Ltd., and to the Hops Marketing Board for generously providing funds for postgraduate research. The new Guinness Research Fellowship for work on fundamental problems in connection with genetics and crop growth has not yet been filled. The Hops Marketing Board postgraduate scholarship has been awarded to Mr. D. G. Martin for research on field problems in connection with the mechanical harvesting of hops including the safe disposal of waste on wilt-infected farms.

The College gratefully acknowledges its indebtedness to the Agricultural Research Council, the Hops Marketing Board and the Institute of Brewing for support given to the Department throughout the year. Thanks are also due to East Malling Research Station, the Brewing Industry Research Foundation, the National Agricultural Advisory Service and the National Institute of Agricultural Botany for their co-operation in a wide range of activities. Grateful acknowledgment is also made to growers and to the Borough for essential help in many aspects of departmental research.

The Department has been active in extra-mural work. During the winter months Dr. Darling, Mr. Thompson and Mr. Beard took part in a course of lectures on hop production organized by the East Sussex County Council at Robertsbridge. Dr. Williams gave a paper at a Mist Propagation Conference held at the College, Mr. Thompson and Mr. Neve gave papers at the N.F.U. Conference for Hop Growers at Maidstone and Dr. Coley-Smith read a paper at a conference of the British Mycological Society. Mr. Thompson represented the Scientific Commission of the European Hop Cultivation

Committee at a meeting of the Liaison Committee with the European Brewery Convention held at Rotterdam.

A notable feature of the year was an exchange of visits between departmental staff and workers at the Western German hop research centre at Hüll near Munich. Professor Zattler, Dr. Chrometzka and Dr. Pfeifer from Hüll visited Wye in July; Mr. Neve, Dr. Williams and Dr. Coley-Smith visited Hüll in August, returning via Belgium where they visited the hop research station at Asse, near Brussels. Mr. Neve also visited the Yugoslavian hop research centre at Zalec, near Ljubliana.

Departmental staff have continued to maintain essential contacts with the English Hop Industry. Representative members have served on a number of relevant committees including the Hops Working Party, the Farm Advisory Committee of Rosemaund Experimental Husbandry Farm, the Hops Advisory Committee of the Institute of Brewing and the New Varieties Committee of the Institute of Brewing.

Publications

Beard, F. H. "Notes on unnamed Wye varieties of hops in commercial cultivation." *Report of the Department of Hop Research, Wye College, for 1958* (in the press).

Beard, F. H. "The challenge cups for the new varieties of hops." *Ibid.* (in the press).

Coley-Smith, J. R. "Overwintering of *Pseudoperonospora humuli* (Miy. and Tak.) Wilson, the causal organism of Downy Mildew disease of hops: a summary of present knowledge." *Ibid.* (in the press).

Darling, H. S. "Hop research at Wye College." *Agriculture*, **65**, 494.

Thompson, F. C. "Some observations on major element deficiencies in hops under field conditions." *Report of the Department of Research, Wye College, for 1958* (in the press).

Thompson, F. C. "The effect of some cultural factors on growing hops for the picking machine." *Association of the Growers of the New Varieties of Hops, 1959 Annual Booklet* (in the press).

Thompson, F. C., and Beard, F. H. "Old varieties of hops." *Hop Report: 1959 season, Wigan Richardson & Co., London* (in the press).

Weston, E. W. "A note on the relationship between soft resins and reducing sugars in the hop cone as a result of nitrogenous manuring." *Report of the Department of Hop Research, Wye College, for 1958* (in the press).

Williams, I. H., and Weston, E. W. "Changes in the carbohydrate balance of the hop (*Humulus lupulus* L.)." *Ibid.* (in the press).

Williams, I. H. (with Sykes, J. T.). "Hop propagation, II. Softwood internodal cuttings." *Ibid.* (in the press).

Williams, I. H. (with Sykes, J. T.). "Factors affecting regeneration from cuttings using mist techniques." *Annals of Applied Biology* (in the press).

The following publications refer to work carried out by members of the Department before appointment to the College:

Coley-Smith, J. R. "Studies of the biology of *Sclerotia cepivorum* Berk. III. Host range; persistence and viability of sclerotia." *Annals of Applied Biology* (in the press).

Williams, I. H. "Effects of environment on *Rubus idaeus* L. II. Field observations on the variety Malling Promise." *Journal of Horticultural Science,* **34,** 170.

Williams, I. H. "Effects of environment on *Rubus idaeus* L. III. Growth and dormancy of young shoots in a controlled environment." *Ibid.* (in the press).

Williams, I. H. "Effects of environment on *Rubus idaeus* L. IV. Flower initiation and development of the inflorescence in the field." *Ibid.* (in the press).

Williams, I. H. "Effects of environment on *Rubus idaeus* L. V. Flower initiation and development in a controlled environment." *Ibid.* (in the press).

THE LIBRARY

The main feature of the year's work in the Library was the considerable increase in the number of books borrowed from other libraries, the figure having risen from 281 (in 1957/58) to 476. This was due to the increased number of postgraduate students and staff engaged on research, and the needs of the new postgraduate course in Poultry Science. Reciprocally, the number of books lent to outside libraries showed but a modest increase from 22 to 26. The number of internal loans decreased slightly to 4,821, though still above the average over the last five years.

The number of accessions increased by nearly one-third to 447 books, while additional pamphlets numbered about 250. Nine new periodicals were subscribed to during the year.

In December the Assistant Librarian passed the remaining part of the examination to qualify for the Associateship of the Library Association. In the middle of May Mrs. Robinson was appointed for part-time clerical duties. This appointment has relieved the Assistant Librarian of some of the purely routine work, particularly the parcelling-up of books, which is such a time-consuming by-product of the increased external borrowing mentioned above.

During the Easter Vacation the Library was asked to take a student from the Department of Librarianship at the North-Western Polytechnic for practical experience, and Miss Sumandjuntak, a graduate of the University of Indonesia on a Colombo Plan Fellowship, came to the College for a week. In the Summer Vacation, a library student from Brighton Technical College spent a week in the Library making a special study.

A comprehensive subject index to the classification has now been completed and added to the card catalogue. This fills a long-felt need and should be of value in encouraging students to make further use of the resources of the Library.

The Library has been pursuing its policy of filling the gaps in back numbers of journals in most demand. Forty-six volumes of the *American Journal of Botany* and the *Journal of Nutrition* are on order, eleven volumes of the *Proceedings of the Nutrition Society* and *Virology* have been purchased, and twenty-six volumes of *Poultry Science* have been acquired by gift and purchase. The addition of these volumes inevitably aggravates the shortage of shelf space which has been growing more acute each year.

We were very pleased to have Edward Hall's portrait of Sir John Russell hung in the Outer Library. A small picture of Cardinal Kemp, painted by Edith Kemp-Welch and bequeathed to the College by her sister, is also to be hung in the Library. The nine volumes of the Court Rolls of the Royal Manor of Wye have been repaired and handsomely rebound, by Messrs. Sangorski and Sutcliffe, in materials as near the originals as possible.

The College is again grateful for numerous gifts received during the year. Particularly noteworthy among these was a set of 18 volumes of *Poultry Science*, presented by Mr. R. George Jaap of Ohio University, U.S.A. As these can command a high price in the second-hand market, it was a most generous gesture on his part. By another act of generosity we were given the opportunity to purchase a further 8 volumes at a 25% discount, from Dr. W. C. Tully of Chattanooga, Tennessee, which completed our set of this journal with the exception of one volume. We are also indebted to Mr. F. R. Francis, Secretary of the British Dairy Farmers' Association, for a further 5 volumes of the *Journal* of the Association to complete our series from 1912 to the present day.

The Library is always particularly pleased to receive copies of books written by members of the College and this year it was presented with three of these: "Good Soil" (revised edition) by the Rev. Dr. G. Brade-Birks; "Farm Rents and Tenure" by Mr. J. T. Ward; and "The Final Report of the Wye College Icelandic Expedition, 1958".

Gifts, which are gratefully acknowledged, were also received from: Mrs. W. B. Askew, Mr. F. Barker, Mr. J. W. Kennard, Mr. P. J. Majendie, Professor H. W. Miles, Mr. W. B. Smith, the Institute of Commonwealth Studies, East Malling Research Station, Imperial Chemical Industries, the Netherlands Institute of Agricultural Science, and the Food and Agriculture Organization of the United Nations.

THE DEMONSTRATION DEPARTMENTS

THE COLLEGE FARM

The wet autumn of 1958 with its delayed harvest and protracted potato lifting gave poor promise for 1959. The chances of autumn sowing appeared to be slender and it seemed unlikely that stock yields and health after the wet and sunless summer would be good. In the event, however, a large acreage of winter wheat was sown and stock wintered well although milk yields were depressed. A dry February shortened the winter and facilitated spring sowing. Spring growth began early, lambing conditions were good and in the early spring and summer livestock, grass and all crops except late sown spring wheat did well. The long dry summer which ensued hastened the harvest; nearly all crops yielded well while livestock also throve and yielded well despite the shortage of pasture. The normal second growths of grass for silage making were not, however, forthcoming and some purchases had to be made to counter scarcity of winter feed.

The financial results of the College Farm for the period ending 31st March 1959 were less favourable than the previous year due to a fall in milk production, losses in clover seed, pea and potato crops and also to a large carry over of conservatively valued corn into the new financial year. The net output* per acre fell from £42 in 1957/58 to £38 for 1958/59, while expenditure rose slightly from £29 7s. 0d. to £30 per acre. As a result management and investment income fell from £12 to £8 per acre. Reasons for the fall in output are mentioned above. The main reason for increased expenditure was an increase in rental of nearly £1 to £5 6s. 0d. per acre. However, the organizational strength of the College Farm remains good, several of the difficulties peculiar to 1958 have been overcome or will not recur and prospects appear brighter for the current year.

* Net output=gross output, adjusted for valuation changes, less purchased feeds and seeds.

The new cropping schemes are getting under way and indeed the importance of rotations has been stressed by the occurrence of take-all, eye-spot and wild oats in some fields which have been overcropped with corn. A contract for a large pea acreage has now been gained for the 1960 harvest which should greatly increase the all-round efficiency of the cropping programme.

Crop yields for 1959 all appear to be good. The results again stress the wisdom of the present policy of concentrating corn growing as far as possible on winter sown wheat and early spring sown barley. Acreages and yields in 1959 were as follows:

	acres	cwt./acre
Winter wheat (Cappelle)	160	36
Spring wheat (Koga 2)	49	29
Spring barley (Proctor)	57½	38

Excellent harvesting conditions resulted in samples of high quality. The contrast between the harvesting conditions of 1958 and 1959 is shown most by the leguminous crops. In 1958 peas could not be harvested and white clover seed yielded only 11 lb. per acre. In 1959 the yields were 29 cwt. and 198 lb. per acre respectively and both crops were combined with virtually no hand labour. Despite the dry year potato yields are also likely to exceed those of 1958 which were seriously reduced by blight.

Milk production received a severe set-back in 1958/59 due in part to poorer quality winter feed and in part to infertility and delayed calvings in the herd.

	1957/58	1958/59
Gallons milk produced per cow in herd	982	822
Concentrates fed:		
Per cow (cwt.)	12·2	13·0
Per gallon (lb.)	1·40	1·78

The feed quality was mainly the result of the bad summer in 1958 and both better silage and hay were made in 1959.

Careful studies suggest that the breeding troubles are partly attributable to husbandry factors which have been remedied, and partly to the combination of high calcium, low phosphorus and low manganese which can occur in diets grown on the College Farm particularly when kale is being fed. Short term supplementation of the rations with minerals containing phosphorus and manganese and longer term attempts to raise the phosphorus and manganese status of the food crops are now in progress. There are indications that herd fertility is improving.

Twenty-one cows (one-quarter of the herd) were used in the

steaming up experiment mentioned previously in the report of the Department of Agriculture, and four dry cows were used for digestibility experiments carried out in winter. A total of 9 cattle and 9 sheep were also provided for summer experiments on the feed intake of grazing stock.

Data recorded for the Aberdeen Angus/Ayrshire and Sussex/Ayrshire cross calves indicated that in winter the Sussex crosses grow rather faster than the Angus and on 12th September the average weights of the groups, which both averaged 12½ months of age, were Sussex/Ayrshire 555 lb., Angus/Ayrshire 515 lb. A young Sussex bull was purchased for crossing purposes and mating is now entirely by A.I. or by this bull.

The farm co-operated with Dow Agro-Chemicals in a widespread trial of a new chemical, used either as a drench or spray for the control of warble fly in cattle. The drenching treatment was most effective and appeared to have no harmful side-effects.

Lambing conditions were good and the incidence of vaginal prolapse was low. Pregnancy toxaemia occurred only to a small extent and the incidence of hypomagnesaemia was low. The latter was controlled by the provision of concentrate nuts which contained 10% calcined magnesite. 263 Halfbred ewes put to the ram reared 150% of lambs and for 151 Kent ewes the percentage was 120. Two groups of Halfbreds and one of Kents were used in a crossing trial to compare the growth rate and fattening ability of lambs by Suffolk and Dorset Down rams. As a result of the poor store lamb trade most of the Halfbred lambs have been retained and fattened. In view of the persistent poor performance of the Kent flock, the failure of selection for twinning to produce satisfactory results, and most importantly in order to simplify flock management, it was decided to disperse the Kent flock over the next two years and to make a corresponding increase in the Halfbred flock.

The extension of the machinery workshops at Coldharbour to accommodate the larger classes reduced the amount of tractor garage and implement storage space. This was made good by the erection of an open-sided shed, adjacent to the main road, for direct attached implements, together with a 5-bay wooden lean-to shed, against the barn, for tractors. The old silage pit at the dairy was converted into a cattle yard and the floor of the new silo was concreted.

New fencing and the renewal of old fencing continued and it is hoped that by 1960 the whole of the Court Lodge farm will be stock-proof. A farm road through Oaks has been completed and one was begun in Russell Field.

The loyal assistance of the staff in carrying out the many operations on the farm is again gratefully acknowledged.

The Fruit Section

The summer of 1958 was one of continuous and heavy rain, giving conditions which made efficient management difficult and favoured pests, diseases and weeds. Despite this, the 60 acres in cropping yielded a greater bulk of soft and top fruits than in any other post-war season. The weight of top fruit harvested was approximately 40% greater than the previous record year of 1957 but the returns by comparison were about 40% less. This disappointment was reflected in the national situation in which record crops of apples and pears in the main fruit growing regions caused the selling price to fall to very low levels. Like many other growers, the College found it necessary to discard entirely the smaller grades of fruit of the less popular apple varieties. The pear crop was about three times the usual average, the whole of it being marketed through the East Kent Packers Co-operative Association.

The soft fruit crop of 45 tons, though 5 tons less than anticipated, was very satisfactory for rain, at picking, caused heavy losses to strawberries and Exploit raspberries. The cost of picking strawberries was high for good samples could only be picked on a day-rate basis. The value of the total soft fruit crop approximated to £9,000.

During the winter of 1958-59 no major planting schemes were initiated save for three acres of the early strawberry, variety Cambridge Vigour, which were established during March as an inter-plant under apples at the north end of Plot K.

The labour force of the Section was made more efficient through the acquisition of a double-sided low-volume spraying attachment to the R.S.M. machine, which enabled an acre of established fruit to be sprayed in 10 minutes and so cut the overall spraying time by approximately 30%. The time saved was effectively used for the gang-mowing of the increased area of grassed orchards. In addition the purchase of a spring-loaded cultivator speeded up work on the arable areas.

The Market Gardens

The reduction of this section in size and range of crops was continued. The strength of the economic arguments for this reduction cannot be denied but nonetheless teaching must still be reasonably comprehensive and must have an adequate demonstration section to support it. Any further reduction in the scope of this section would be likely to upset the balance of the Department and must be avoided if teaching is not to be seriously prejudiced.

Seed production of the coarser vegetable crops has been dis-

continued and during the season under review the only large areas of seed maintained were of beet and brassicas for which the Department had previously contracted. Seed growing in England has always been unreliable because of the weather risks and the uncertainty of the seed trade. It has been unfortunate that the efforts of the Department have coincided with a ten-year cycle of bad weather. However, as a result of the work on seed production, there are now Wye-trained graduates specializing on this subject in England, Africa and Malaya.

The intensive market garden continued in its more simplified form, that is to say without summer cropping under the flat lights and without celery, melons or chrysanthemums. Though the purpose was to save labour and simplify management, owing to the unfortunate season a loss of income of £1,000 was recorded whilst the labour bill (about £1,500) remained at approximately that of the previous years.

The mobile glasshouse showed satisfactory financial results, though the tomato yield was reduced by *Didymella* attack. In the present year (1959) every precaution has been taken against a recurrence of this particular disease and the captan treatment as advised by the National Glasshouse Research Station has been employed.

The cropping of the heated glasshouses is now stabilized with four main crops, tomatoes for seed, chrysanthemums, freesia and pot plants. In 1958 the two largest sources of income were hybrid tomato seed and chrysanthemums, each worth about £1,700. A high proportion of the chrysanthemum income came from the outdoor crop which is now generally thought to be an enterprise of doubtful profitability. Its future will be considered on the basis of careful recording.

The Decorative Gardens

During the year most of the Canterbury Garden area was lost to provide land for the new laboratories. It is hoped that when building is completed there will be some compensation in the shrubs required for planting around the new buildings. The mixed border beside Olantigh Road has been retained for the present although if it is to remain as a permanent feature extensive replanting will be necessary.

At Withersdane plans to redesign the rock bank were approved and local stone ordered for the work. The reconstruction of this bank will take the form of dry walls and terracing and will be put in hand early in the Autumn term. It is hoped that it will be possible to grow a much wider range of rock garden plants than at present.

The woodlands adjacent to the back drive have been further planted up with shade-tolerant shrubs; these have unfortunately suffered much owing to the intensity of the summer droughts. During the year the chamomile and penny royal paths in the herb garden were replaced by grass to simplify maintenance. A much wider range of annual plants was grown in the several sections of the gardens usually devoted to them, and as well as proving useful for teaching purposes they made a gay show during a summer of plentiful sunshine and high temperatures when the gardens have been most fully appreciated.

The gardens were opened to the public on two occasions and good attendances were recorded. The greater interest of the gardens as they mature has been commented upon by visitors and it is instanced by species flowering for the first time. After a mild winter, *Paulownia tomentosa*, now a large tree about eleven years old, was quite covered with pale blue, tubular flowers and set seed freely. Other plants that flowered at Wye in 1959 for the first time were *Buddleia colvillei* and *Phormium tenax*.

The collection of 26 species and varieties of *Diervilla* has been greatly extended by a valuable series presented to the College by Messrs. Hilliers, and stock plants of these are yielding cuttings for experimental work. The College is also indebted to Mr. Edward Hyams for flower seeds from the Canary Islands including *Dracaena draco*, *Thevetia neriifolia*, *Canarina campanulata* and *Lotus bertholetti*. These have been grown in the greenhouses and the Lotus, with scarlet flowers and grey foliage, has proved especially interesting as a summer bedding plant.

The Wye College garden catalogue was revised and brought up to date during the year and the new edition was issued in May 1959. Although, in its present form, this does not include all the herbaceous plants and bulbs, the cataloguing of plants grown and their position in the garden helps students to familiarize themselves with the various plants and note the situation in which they are grown. Reference to this also assists the correct labelling of plants and avoids duplication of plants in the gardens.

A further list of the plants in their botanical families has also been prepared and this will be ready for circulation to students and interested organizations such as Botanic gardens at the beginning of the session.

APPENDICES

I

ACADEMIC AND SENIOR ADMINISTRATIVE STAFF

Resignations during the year:

Eleanor J. Bell, B.Sc., Ph.D.(Glasgow), Demonstrator in Agricultural Zoology in Department of Biological Sciences.

K. E. Carling, B.Sc.(Lond.), Analyst in Department of Physical Sciences.

G. G. Clarke, B.Sc., Ph.D.(Bristol), Organic Chemist in Agricultural Research Council Growth Substance and Fungicide Unit.

G. L. Mattok, B.Sc., Ph.D.(Wales), Assistant Lecturer in Agricultural Chemistry in Department of Physical Sciences.

Beryl Rickard, B.Sc., Ph.D.(Lond.), A.R.I.C., Assistant Lecturer in Agricultural Chemistry in Department of Physical Sciences.

F. Wightman, B.Sc., Ph.D.(Leeds), Biologist in Agricultural Research Council Growth Substance and Fungicide Unit.

Promotions confirmed during the year:

R. H. Best, B.Sc.(Dunelm), M.Sc.(Lond.), from Assistant Lecturer to Lecturer Grade B.

J. G. W. Jones, B.Sc.(Dunelm), Ph.D.(Aberdeen), from Assistant Lecturer to Lecturer Grade B.

Marion Murray, B.Sc.Agric.(Edin.), M.Sc.(Ohio), from Assistant Lecturer to Lecturer Grade B.

G. F. Pegg, B.Sc.(Lond.), M.Sc.(Nott.), Ph.D.(Lond.), from Assistant Lecturer to Lecturer Grade B.

Margaret S. Smith, B.Sc., Ph.D.(Lond.), A.R.I.C., from Lecturer to Senior Lecturer.

E. H. Wilkinson, B.Sc.(Birm.), Ph.D.(Bristol), from Lecturer to Senior Lecturer.

SECRETARIES OF COLLEGE COMMITTEES

Secretary of Academic Board	C. W. A. Garland
Secretary of Board of Studies	A. A. Jackson
Secretary of Research Colloquia	J. E. Duckworth

ELECTED OFFICIALS OF THE COLLEGE

President of the Senior Common Room	H. W. Miles
Steward of the Senior Common Room	I. G. Reid

OFFICIALS OF THE STUDENT UNION SOCIETY

Patrons	The Principal
	The Vice-Principal
Trustees	The Patrons
	The College Warden
Senior Treasurer	C. W. A. Garland
President	J. Bennett
Vice-President	Beryl Cox
Secretary	D. O. M. Gooday
Junior Treasurer	J. M. Crowther

II

THE STUDENT BODY

		1958/59		1957/58	
Total Student Body		229*		202	
Men		184		154	
Women		45		48	
Reading for 1st Degrees in Agriculture					
Honours Degree:	Men	46		45	
	Women	5		7	
		—	51	—	52
General Degree:	Men	81		65	
	Women	11		11	
		—	92	—	76
			—		—
	Total		143		128
Reading for 1st Degrees in Horticulture					
General Degree:	Men	35		35	
	Women	27		29	
		—		—	
	Total	62		64	
Reading for Postgraduate Degrees					
	Men	22		9	
	Women	2		1	
		—		—	
		24		10	

* Includes two students reading for General degree in Agriculture and one reading for degree in Horticulture who withdrew during the session.

EXAMINATION RESULTS—JULY 1959

First and Second Year Examinations

	Passed	*Referred (or Pass in one Section)*	*Completed Examination by Passing in one Section*	*Failed*	*Total Candidates*
Agriculture (Honours) Degree					
Part I	13	4	7	3	27
Part II	18	–	–	1	19
Agriculture and Horticulture (General) Degree					
First Examination	36	12	12	14	74

Final Examinations

		Passed	*Referred (or Pass in one Section)*	*Failed*
Agriculture (Honours) Degree				
1st Class Honours	2			
2nd Class Honours:				
Upper Division	1			
Lower Division	5			
Pass	5			
	—	13	—	2
Agriculture (General) Degree				
First Division	1			
Second Division	13			
Third Division	8			
	—	22	5	3
Horticulture (General) Degree				
First Division	5			
Second Division	8			
Third Division	4			
	—	17	—	3

IV

DEGREES CONFERRED BY THE UNIVERSITY DURING THE YEAR 1958-59

Awarded the B.Sc. Degree in Agriculture with Honours

First Class	*Second Class*	*Pass*
	(*Upper Division*)	
Cowling, Keith	Clough, Richard	Amos, Graham
	Cole, John	Bohun, Roger
	Festing, Michael	Enyi, Brown
	(*Lower Division*)	Gray, Hugh
	Coxe, Barry	Needham, David
	Hopkins, Gillian	Smith, Judith
	Nott, James	Stratford, Ian
	Stockwell, Antony	

Awarded the B.Sc. Degree in Agriculture

First Division	*Second Division*	*Third Division*
Haggarty, Robin	Asher, Brian	Groom, Cyril
	de Whalley, Clare	Mason, Alan
	Holland, Henry	Shacklock, John
	Lee, Philip	
	Marks, Timothy	
	Nurse, John	
	Spilman, Ann	
	Thompson, Peter	

Awarded the B.Sc. Degree in Horticulture

First Division	*Second Division*	*Third Division*
Everitt, Malcolm	Adam, Jill	Clark, Phillip
Gwynn, Susan	Garas, Rene	Crundwell, Kenneth
	Hewitt, Margaret	Grime, Roy
	Kelly, Michael	Jasper, Shirley
	Manning, Moira	Martin, Margaret
	Morgan, Iona	
	Moutia, Sydney	
	Mylechreest, Murray	
	Nicholson, Julian	
	Whetter, Jennifer	

Awarded Ph.D.

Darling, Harry	Staff (1954-)
Pegg, George	Staff (1954-)

Awarded M.Sc.

Arthey, David	(1956-)
Munn, Sylvia	(1955-1957)
Osman, Hussein	(1956-1958)
Price, David	(1950-1953)
Tyler, Godfrey	(1951-1954) and Staff (1957-)
White, James	(1953-1958)

POSTGRADUATE SCHOLARSHIPS AWARDED AT THE END OF SESSION 1958-59

Scholarships awarded to students of the College

Name	*Awarding Body*	*Tenure*
Bartlett, Cyril	Ministry of Agriculture	Bristol University (Long Ashton Research Station)
Caseley, John	,, ,,	Bristol University (Long Ashton Research Station)
Coppock, Janis	British Egg Marketing Board	Wye College
Gaunt, John	Ministry of Agriculture	University College of North Wales, Bangor
Gowen, Brian	Pig Industry Development Authority	Aberdeen University
Holt, Noel	Ministry of Agriculture	Wye College
Howard, Brian	,, ,,	Wye College
Jenner, Colin	,, ,,	Oxford University
Kelly, Michael	,, ,,	Imperial College of Science and Technology
Langlands, John	,, ,,	Rowett Research Institute
Macdonald, Lesley	"Shell" Research Ltd.	Wye College
Price, Ian	University of Arizona	Boyce-Thompson Arboretum, Arizona
Wells, Richard	Ministry of Agriculture	Wye College

Scholarships tenable at Wye College awarded to students from elsewhere

Name		*Awarding Body*
Barr, Donald	Liverpool University	British Egg Marketing Board
Evans, Albert	University College of Wales	British Egg Marketing Board
Halliwell, Peter	University of Durham	British Egg Marketing Board
Islam, Shamsul	Manchester University	Council on Economic and Cultural Affairs of America
Martin, David	University of Reading	Hops Marketing Board
Waring, Frederic	University College of North Wales	Ministry of Agriculture

V

COLLEGE SCHOLARSHIP AWARDS

The Paton Figgis Scholarship
Geoffrey Hide

The Women's Land Army Scholarship and Bawden Fund
Pamela Hide

PRIZE AWARDS

The Harwood Memorial Medal and Prize
Richard Wells

The Hughes Memorial Prize
Robin Mackenzie

The Mary Bond Prize
Christina Somerville

The Monica Franklin Prize
Lesley Macdonald

The Bell Bequest
Philip Lee

Fruiterers' Company Medal
No submissions, and therefore no award

Gardeners' Company Prize Award
Susan Cornwell

Agricola Club Prize
Andrew Nowell

The Millers' Mutual Association Prize
Peter England

The Landsman's Library Prize
Robin Mackenzie

British Oil and Cake Mills Ltd. Essay Prize
James Langlands

Spillers Ltd. Prize
William Hill

VI

STUDENTS ADMITTED TO THE COLLEGE SESSION 1957-1958

Postgraduates	*University*
Appadurai, Reginald	Ceylon, and Texas A. & M.
Ayed, Ibrahim	Khartoum
Beresford, Stewart	Reading
Byng, Albert	Sheffield
Coppock, Janis	Wales
Durrant, Rodney	Nottingham
Garraway, James	London
Haggar, Roger	Wales
Hardaker, John	Nottingham
Holt, James	Wales
Howe, Patricia	Nottingham
Hunton, Peter	Durham
Khattab, Abdel	Khartoum
Maung Maung Tin	Rangoon
Sharp, Keith	Leeds

Wye College graduates re-admitted to postgraduate study
Festing, Michael
Lee, Philip
Thompson, Peter

Undergraduates	*School*
Alexander, John	Hove County Grammar School
Allison, Duncan	Uppingham School
Ambridge, Miles	Oundle School
Baker, David	Newport High School
Bancroft, Susan	Hunmanby Hall, Filey
Bartlett, Christopher	Dartington Hall, Devon
Bawden, Richard	St. Boniface's College, Plymouth
Beeney, Brian	Bexhill County Grammar School
Biggs, Anthony	Manor Park Technical College, Nuneaton
Bines, John	Latymer Upper School, London
Bowyer, Kenneth	Sir George Monoux Grammar School, London
Bracey, David	Luton Grammar School
Brown, Clive	East Ham Grammar School
Bunce, Valerie	Marlborough Grammar School
Burgess, Michael	St. Mary's School, Nairobi
Bushby, Michael	Uppingham School
Butler, John	Rugby School
Cale, William	Ledbury Grammar School
Carruthers, Ian	Sidcup Grammar School
Chakravartti, Ashis	Calcutta University
Cooke, Jane	Chichester Girls' Grammar School
Copper, John	Skinner's School, Tunbridge Wells
Cornwell, Susan	Walthamstow Hall, Sevenoaks
Coward, Norman	Latymer Upper School, London
Delamore, Alan	Sir George Monoux Grammar School, London
Deppe, Brian	St. Dunstan's College
Derouet, Timothy	Radley College
Dye, Anthony	Hammond's Grammar School, Swaffham
Edwards, Janis	St. Brandon's School, Clevedon
England, Gillian	Harwich County Girls' School and London University
Field, Colin	Finchley County Grammar School
Foote, Richard	Dynevor Secondary Grammar School, Wales
Fuller, Richard	Kent College, Canterbury
George, Peter	Truro School
Gooch, Peter	Cheltenham College
Graham, Robert	Tonbridge School
Hill, William	St. Albans School
Hobcraft, Roger	St. Dunstan's College
Lutener, Michael	Maidstone Grammar School

Mackley, Antony	Chichester High School
Majendie, Peter	Downside School
Methven, Ian	Loretto School
Mitchell, Suzanne	Convent of the Sacred Heart, Hammersmith
Moss, James	King's School, Canterbury
Norman, David	Lewes County Grammar School
Nye, E. Jane	Croydon High School
Palmer, Geoffrey	Chipping Sodbury Grammar School, and North Gloucestershire Technical College
Piddington, Stella	North London Collegiate School
Pratt, Peter	Chichester High School
Price, Barbara	Rhondda County School for Girls
Rose, David	Beckenham and Penge County Grammar School
Shaw, Geoffrey	Wrekin College
Smith, Lawrence	Bedford Modern School
Spurling, Andrew	Marlborough College
Steere, Richard	Wallington County Grammar School
Tapp, Martin	The Leys School, Cambridge
Thomas, David	Merchant Taylors' School
Thomas, Peter	Bentley Grammar School
Thorburn, David	Whitgift School
Waterman, David	Sherborne School
Wheater, Richard	Brighton, Hove and Sussex Grammar School
Whellams, John	Sir George Monoux Grammar School, London
Whitmey, Christopher	Wallington County Grammar School
Wiggan, Michael	Dudley Technical College, and Staffordshire Farm Institute
Wilkinson, Anthony	Oundle School
Williamson, John	Uppingham School
Winn, David	St. Dunstan's College
Woods, Bernard	Epsom College
Wormald, Jeremy	King William's College, Isle of Man

VII

STUDENT CLUBS AND SOCIETIES

Clubs

Rugger
Soccer
Hockey (Men)
Hockey (Women)
Cricket
Tennis
Rifle
Archery
Athletics
Cross Country
Squash
Badminton
Ploughing
Wye College Beagles
Chess
Swimming

Societies

Music
Debating
Archaeological
Dancing
Scientific
Exploration
Dramatic
Natural History
Christian Fellowship
Photographic
International Student Exchange
United Nations Student Association

VIII

BENEFACTIONS

From the Worshipful Company of Gardeners, £100 towards a Postgraduate Scholarship tenable at the College.

From the Worshipful Company of Gardeners a College Prize, £5 5s.

From the Worshipful Company of Fruiterers, a medal for a College Prize.

From Messrs. May & Baker Ltd., a renewal of the Research Fellowship, £750.

From Messrs. Fisons & Co. Ltd., a renewal of the three year research fellowship in Biology, £750.

From the Shell Petroleum Co. Ltd., a renewal of the research grant for a further year, £500.

From Arthur Guinness, Son & Co. Ltd., a renewal of the general grant for a further year, £50.

From the Millers' Mutual Association for a College Prize, £4.

From the British Oil & Cake Mills for a College Prize, £15 15s.

From the Landsman's Library, a prize award of books to the value of £2.

From the British Egg Marketing Board, the sum of £2,700, and £400 per annum for three years to provide for a building, equipment and technical assistance towards research into egg quality.

From Vitamins Ltd., the sum of £1,000 per annum for three years to assist the development of research work in the Poultry Department.

From the estate of Mrs. Jane Goord, presented by her daughter Mrs. V. McCredie, a silver punchbowl, silver ladle, two silver-chased cups and a framed list of subscribers awarded in 1834 to Mr. Richard Goord of Milton for the services rendered by him in the improvement of the breed of long-woolled Kentish sheep.

From Colonel H. E. Kitching, M.B.E., in memory of his son, A. H. Kitching, a student of the College from 1938 to 1939, who was killed in action in 1943, a silver tankard made by Michael Murray, for use on the low table in Hall.

From the Hops Marketing Board, the sum of £600 per annum for two years to provide for a postgraduate scholarship in the Department of Hop Research.

From Arthur Guinness, Son & Co. Ltd., a seven-year covenant to provide £3,010 for two postgraduate scholarships in the Department of Hop Research.

IX

PUBLIC SUBSCRIPTION CONCERTS

(The National Federation of Music Societies, to which the Wye College Music Club is affiliated, supports its concerts with funds provided by the Arts Council of Great Britain)

19th October 1958	The Sylvan Trio
23rd November 1958	Sidney Harrison—Lecture Recital: "What it takes to be a Pianist"
11th January 1959	Opera for All—an Arts Council production: "The Beggar's Opera"
1st March 1959	Sheila Randell—Pianist

PUBLIC ART EXHIBITIONS

An exhibition of paintings by Edward Hall, R.P.

An exhibition of ceramics and weaving by present-day artists organized by Margaret Iliffe, A.R.C.A.

X

COLLEGE LECTURES

Autumn Term

R. N. Carew Hunt, Esq., M.A.
"The Theory and Practice of Communism"

Professor Sir Joseph Hutchinson, C.M.G., Sc.D., F.R.S.
"The Unravelling of Cotton"

Spring Term

J. A. F. Watson, Esq., F.R.I.C.S., J.P.
"Children in Trouble: The Work of the Juvenile Court"

Professor J. McMichael, M.D., F.R.C.P., F.R.S.
"The Prolongation of Life"

Professor D. Lewis, Ph.D., D.Sc., F.R.S.
"Plants in Pursuit of Hybridity"

XI

RESIDENTIAL CONFERENCES AND COURSES HELD AT THE COLLEGE 1958-59

	Approx. Nos Attending
10th April—13th April 1959	
British Agricultural History and Economic History Societies	110
13th April—14th April	
Staff and students from Ghent University ..	40
17th April—19th April	
Town Planning Institute	45
3rd July—11th July	
Staff and students from Wageningen University	20
9th July—11th July	
British Egg Marketing Board	35
13th July—15th July	
Student Christian Movement (Kent schools) ..	30
14th August—29th August	
University of London Summer School	150
11th September—13th September	
Food and Farming Extra-Mural Course	50
24th September—25th September	
Farm Management Conference	30
25th September—27th September	
Kent Probation Officers	100
28th September—30th September	
N.A.A.S. Regional Council	40
3rd October—4th October	
Agricola Club Dinner	151

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